HEWLETT
PACKARD

LaserJet IIIP Printer User's Manual

Warranty card sent in 11-11-92

Calling for Help

Fill in the following form so that you will have this information handy if you ever have to call for service or support:

What is the serial number of your printer?	3128JG3BTV
What model printer do you have?	HP LaserJet IIIP printer
What is the brand and model of your computer?	
What kind of printer interface cable are you using (parallel or serial)?	Parallel
How is your printer connected to your computer: directly, or through a network, spooling device, switchbox, or modem?	switchbox

You will also need to know the version of the software you are using, and which printer driver you have selected.

Service Support

To find an authorized **Hewlett-Packard Service Dealer**, call **(800) 835-4747.** (See chapter 9 of this manual for detailed service and warranty information.)

Customer Support

Try following the troubleshooting steps in chapter 8 to see if they help you solve your printer problem. If you suspect a software problem, call your software vendor or refer to your software manual. If you need further help, call the **HP Personal Peripherals Assist Line** at **(208) 323-2551**. Hours are 7 am - 6 pm (MT) Monday, Tuesday, Thursday, Friday; and 7 am - 4 pm Wednesday.

Ordering Printer Drivers and Software Application Notes

HP LaserJet IIIP printer drivers for several popular software packages are available through **HP's Distribution Center** at **(303) 353-7650**. Hours are 7 am to 6 pm (MT), Monday through Friday.

You can call **HP FIRST** *from your FAX machine's telephone* for 24-hour access to ordering information for updated software application notes, printer drivers, data sheets, and lists of supported software and hardware. You must have a touch tone group 3 FAX machine. Pick up the handset on your FAX machine and dial **(208) 344-4809.** HP FIRST's computer will prompt you to use the FAX keypad to enter the code number for the product support information you want to receive by return FAX.

Software application notes and printer drivers are also available through **CompuServe's HP Forum.**

Ordering Accessories and Supplies

To find an authorized Hewlett-Packard dealer near you, call **(800) 752-0900**. If your dealer is temporarily out of stock, call **HP Direct (800) 538-8787**. For additional pre-sales product information, call the **HP Customer Information Center**, **(800) 752-0900**.

HP LaserJet IIIP Printer User's Manual

HEWLETT
PACKARD

HP Part No. 33481-90901
Printed in Japan

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What You Can Learn From This Manual

This manual introduces you to the HP LaserJet IIIP printer: its features, operation, maintenance, and troubleshooting. This manual provides information for both first-time users of HP LaserJet printers and those already familiar with previous models of HP LaserJet printers.

Make sure you have successfully set up and configured your printer following the instructions in the *HP LaserJet IIIP Printer Getting Started Guide* before using the features described in this manual.

For First-Time Users

This manual tells you how to operate and maintain the HP LaserJet IIIP printer. You will also learn:

- How to begin using software application packages (such as word processing or spreadsheet programs) to access many of the printer's powerful features.
- How to use fonts and typefaces with your printer.
- How to use the printer control panel to manually select and set printer options.

For Experienced HP LaserJet Users

Read this manual for review and to learn about the HP LaserJet IIIP printer's many new features. The operation of the control panel keys and indicators is similar to the LaserJet IIP model; however, there are differences in both the range and sequence of control panel selections.

Manual Overview

The following paragraphs outline the information contained in this manual.

Chapter 1 – *Getting Acquainted with Your Printer*, provides an introduction to the printer features, accessory products, and an overview of key printer components.

Chapter 2 – *Using the Printer Control Panel*, describes the function and operation of the keys, indicators, and option menus.

Chapter 3 – *Printing from the Multi-Purpose Tray*, explains the different types of media that are used in the Multi-Purpose (MP) tray, and the different print jobs that utilize the Multi-Purpose tray.

Chapter 4 – *Using the Optional Lower Cassette*, gives instructions on using the Optional Lower Cassette. It also gives examples of special printing options which use the Optional Lower Cassette with the Multi-Purpose tray.

Chapter 5 – *Using the Printer with Your Software*, shows how to use your application software to accomplish common printing tasks.

Chapter 6 – *Using Type and Fonts*, is an overview of scalable typefaces and bitmapped fonts and how they are used by the printer.

Chapter 7 – *Maintenance and Adjustments* explains how to clean and care for your HP LaserJet IIIP printer.

Chapter 8 – *Solving Printer Problems* explains how to fix occasional problems such as paper jams.

Chapter 9 – *Service and Support*, provides information you should know in the event your HP LaserJet IIIP printer ever needs repair.

Related User Information

The *HP LaserJet IIIP Printer User's Manual* contains information on using most of the printer's common features. If you need additional copies, order HP part number 33481-90901. The *HP LaserJet IIIP Printer Quick Reference Guide* is included with your order.

The related documents provided with your printer contain information such as how to install and configure your printer and notes on using the printer with the more popular software packages.

Your HP LaserJet IIIP printer comes with:

- *HP LaserJet IIIP Printer Getting Started Guide* (HP part number 33481-90905): Leads you through the successful set-up and configuration of your printer. **Read it first!**
- *HP LaserJet IIIP Printer Quick Reference Guide*: Helps you use the control panel and understand common display messages quickly and access commonly used features from your software.
- *Software Application Notes*: Contains information about using your HP LaserJet IIIP printer with some of the most popular software packages. To have individual copies of the most current application notes faxed to you, call HP FIRST at (208) 334-4809 from your fax machine. To have copies mailed to you, call HP's Personal Peripherals Assist Line at (208) 323-2551.
- *HP LaserJet Accessory Catalog*: Contains descriptions and ordering information for items such as toner cartridges, envelope trays, paper trays, scalable typefaces, fonts, and memory.

You can use the order card at the front of this manual to request your free copy of the following technical manuals:

- The *PCL 5 Technical Reference Manual* (HP part number 33481-90969): Explains the PCL 5 printer language for experienced users and programmers. A *Technical Quick Reference Card* for the PCL 5 printer language is included with the manual. Also included is the *PCL 5 Comparison Guide* which describes the different implementation of commands and extensions across the printer family supporting PCL5.
- The *HP LaserJet Printer Family Paper Specification Guide* (HP part number 5002-1801): Explains in detail the HP LaserJet printer paper and other print media specifications.

You can order additional copies of the manuals from HP Direct by calling 800-538-8787 in U.S.A toll free or (408) 720-2428 direct. In Canada call 800-387-3867. In the United Kingdom call 0374-441212. In Germany call (0130) 3322.

Conventions

The following conventions are used throughout this manual:

- **Bold** usually indicates a term defined in the Glossary.
- *Italic* is used for emphasis.
- `COMPUTER` type indicates text that appears on the printer's control panel display.
- KEY or Key indicates a printer control panel key.

Note

Notes contain important information set off from the text.

Caution

Caution messages indicate procedures which, if not observed, could result in damage to equipment or loss of data.

Warning

Warning messages indicate when a specific procedure or practice is not followed correctly, personal injury could occur.

Optional Lower Cassette

Throughout this manual, reference is made to the "Optional Lower Cassette." Statements such as: "*if* you have an Optional Lower Cassette installed, do this ... " or "this happens *if* you have an Optional Lower Cassette installed" appear in the text where appropriate.

Chapter 4 focuses entirely on how to use the Optional Lower Cassette. The Optional Lower Cassette is purchased separately. Disregard references to its usage if you do not have the Optional Lower Cassette installed on your printer.

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1

Getting Acquainted with Your Printer

Introduction

This chapter will give you an overview of the features of the HP LaserJet IIIP printer. It will also introduce you to the major components of your printer as well as the optional accessories that are available.

Key Features

The HP LaserJet IIIP printer offers the advantage of a compact printer design featuring:

- Resolution Enhancement:™ A Hewlett-Packard innovation that sets a new standard of print quality for 300 dot-per-inch (dpi) printing.
- PCL 5 Printer Language, including commands for:
  - ☐ Internal scaling of type to create characters in sizes ranging from 0.25 points to 999.75 points (over 13 inches high).
  - ☐ HP-GL/2 vector graphics for increased graphics performance and page layout capability.
  - ☐ Software compatibility with other HP LaserJet printer models.
  - ☐ Special effects, such as reverse printing ("white on black"), patterned fonts, half-tones, and graphics.

- Scalable typefaces: The HP LaserJet IIIP printer features **scalable typefaces** for generating fonts of any desired point size up to 999.75 points in quarter-point increments. Eight proportionally spaced scalable typefaces and fourteen bitmapped fonts are internal to the printer.

Line Printer
Courier
Courier Bold
Courier Italic

CG Times	Univers Medium
CG Times Bold	**Univers Bold**
CG Times Italic	*Univers Italic*
CG Times Bold Italic	***Univers Bold Italic***

Figure 1-1.
Sample HP LaserJet IIIP Printer Internal Fonts and Typefaces

- Auto-rotation for fonts and raster graphics: Print images rotate automatically as the page orientation is changed, eliminating the need for separate landscape fonts.
- Extensive internal symbol set support.
- Printer messages displayed in your choice of ten languages: English, French, German, Italian, Spanish, Swedish, Danish, Norwegian, Dutch, and Finnish.

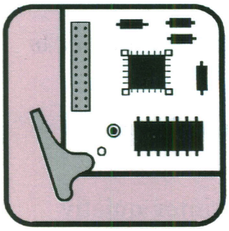
- One font cartridge slot which accommodates all HP LaserJet family compatible font cartridges, including scalable typeface cartridges. The slot also accommodates HP personality cartridges such as the PostScript™ and Epson FX/IBM Proprinter personality cartridges.
- One megabyte of base RAM memory and two memory slots to hold additional memory upgrades. The printer prints text and half-page graphics at 300 dpi with the standard base memory, and full-page graphics at 150 dpi. When at least 1 megabyte of additional memory is installed, full-page graphics will print at 300 dpi.
- Serial and Centronics parallel printer interfaces.

Operating and Maintenance Features

- Quiet and fast: The HP LaserJet IIIP printer quietly prints high-quality output up to 4 pages per minute. (Actual print speed depends on data complexity and software data handling efficiency.)
- Sophisticated paper handling. The HP LaserJet IIIP printer comes with the HP LaserJet IIIP printer Multi-Purpose (MP) paper tray, Hewlett-Packard's most flexible paper tray, designed to hold up to:
    - ☐ 70 sheets of letter, A4, legal, or executive paper.
    - ☐ 5 envelopes.
    - ☐ 18 sheets of labels.
    - ☐ 25 transparencies.
- A correct-order face-down output tray, and a reverse-order face-up output tray to provide maximum paper handling flexibility.
- Supports a wide range of paper and other print media sizes and types, including envelopes, labels, and overhead transparencies.
- Easy-to-use control panel for default print job and configuration selections.

- Simple maintenance procedures to maintain high-quality output.
- A toner cartridge that is easy to replace.

Accessories



Some accessories available for the HP LaserJet IIIP printer are:

- Memory: Up to 4 megabytes of additional memory, in 1 or 2 megabyte increments may be added for a total of 5 megabytes.
- Optional Lower Cassette and base. This changes your printer into a dual-bin machine and increases the printer's total paper input capacity from 70 to 320 sheets.
- PostScript capability: A PostScript personality cartridge may be added to provide true PostScript language operation.
- Extensive scalable typeface and bitmapped font collections.
- *Type Director* utility:
  - ☐ Installs accessory type and soft fonts.
  - ☐ Provides enhanced screen font resolution.
  - ☐ Features sophisticated type and font management.
- RS-422 adapter for the serial interface.
- AppleTalk interface board.

To order these options or any of the accessory products for your HP LaserJet IIIP printer, see the *HP LaserJet Accessory Catalog* included with your printer, or refer to the inside front cover of this manual for ordering information.

HP LaserJet IIIP Printer Parts

The following illustrations identify important parts of the printer that will be referred to later in this manual.

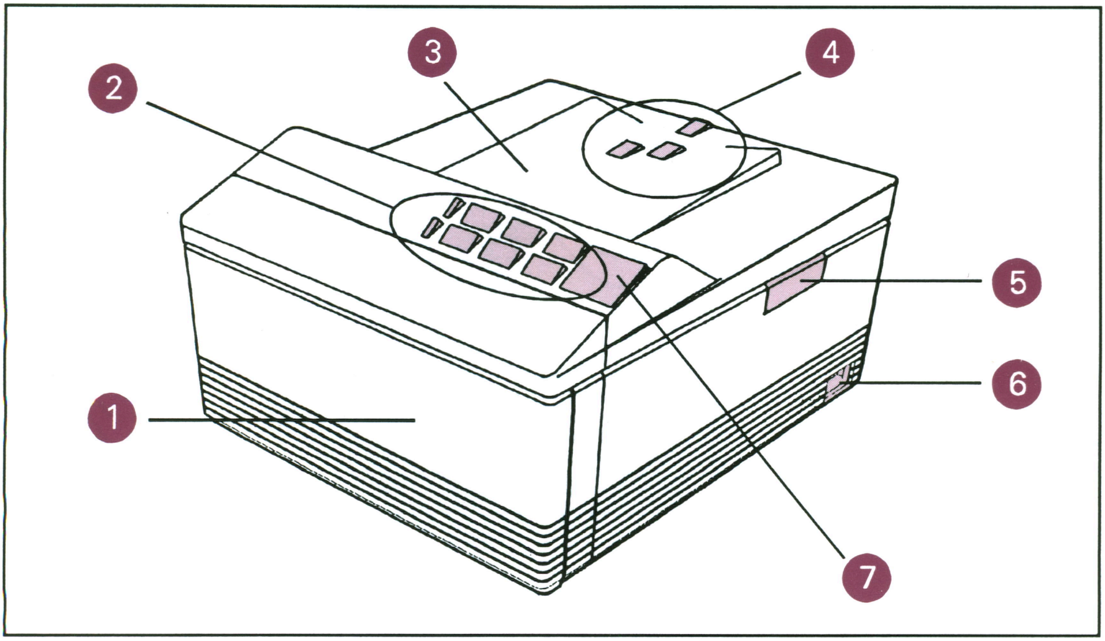


Figure 1-2. Top and Right Side of the Printer

1. Multi-Purpose (MP) Tray door
2. Control panel
3. Top output tray
4. Paper stops
5. Font cartridge slot
6. Power switch
7. Display

The Multi-Purpose Tray

Open the Multi-Purpose (MP) tray by pulling down on the left and right sides of the Multi-Purpose tray door, as shown in figure 1-3.

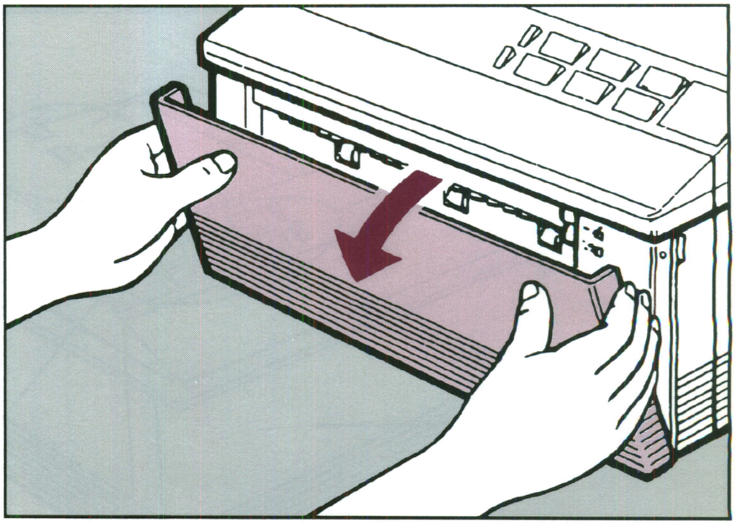


Figure 1-3. Opening Multi-Purpose Tray Door

Inside Front of the Printer

Once you pull down the Multi-Purpose tray door on the front of the printer, the following parts are visible.

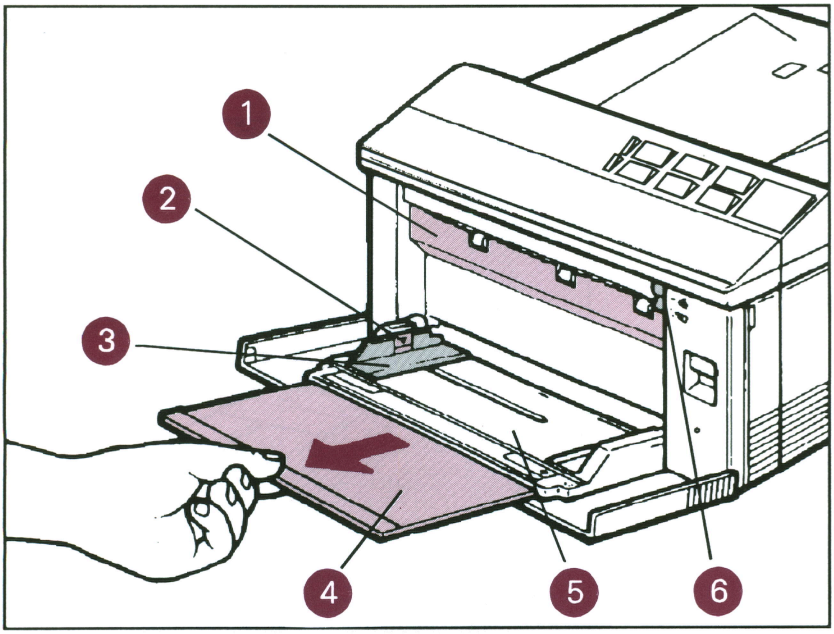


Figure 1-4. Inside Multi-Purpose Tray Door

1. External fuser access door	4. Multi-Purpose tray extender
2. Paper fill arrow	5. Multi-Purpose tray
3. Media width adjuster	6. Output tray selector button

Opening the Paper Path Door

1. Open the paper path door by pushing upward on the paper path door release button ①. It is located on the right front side of the printer when the Multi-Purpose tray door is open.
2. Pull down on the paper path door ②.

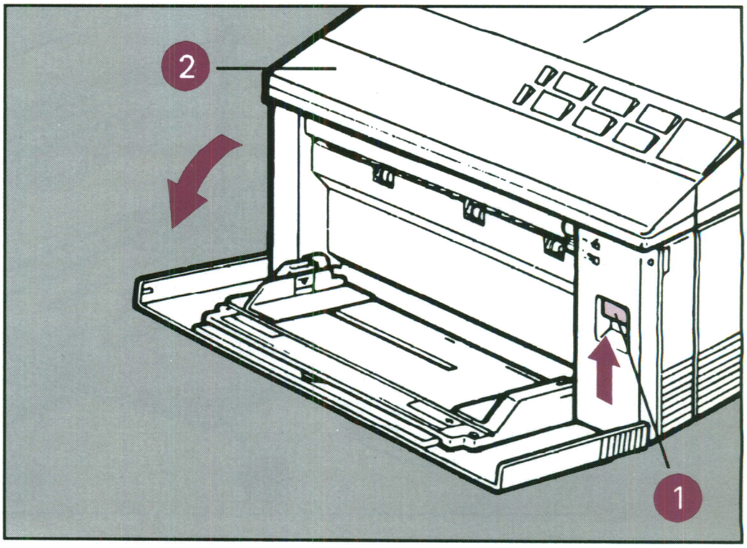


Figure 1-5. Open Paper Path Door

1. Paper path door release button
2. Paper path door

Inside the Paper Path Door

Once you have opened the paper path door, the following parts are visible:

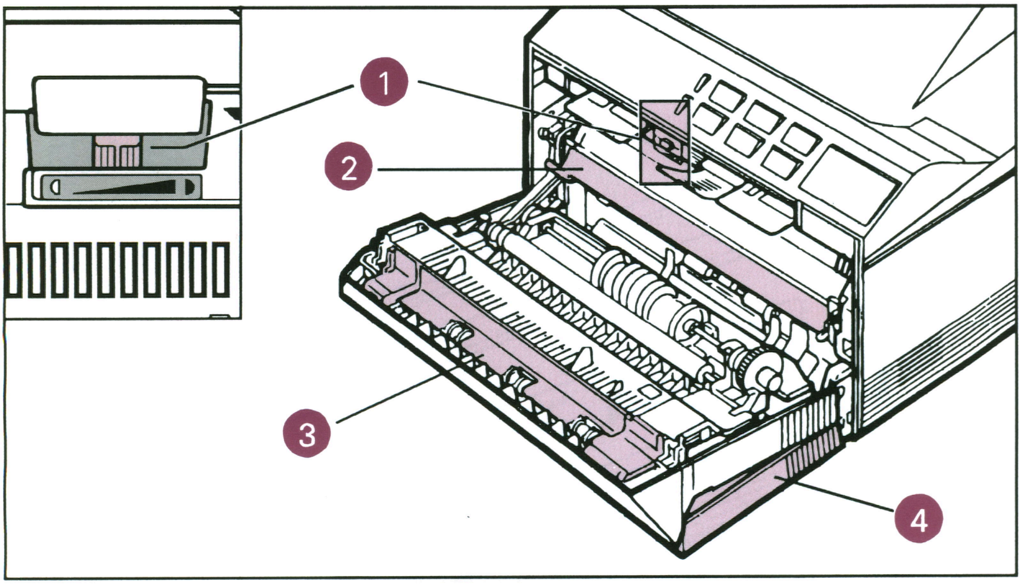


Figure 1-6. Inside the Paper Path Door

1. Print density slide
2. Toner cartridge (installed)
3. Internal fuser access door
4. Multi-Purpose tray door

Back of the Printer

The following parts are located on the back of the HP LaserJet IIIP printer.

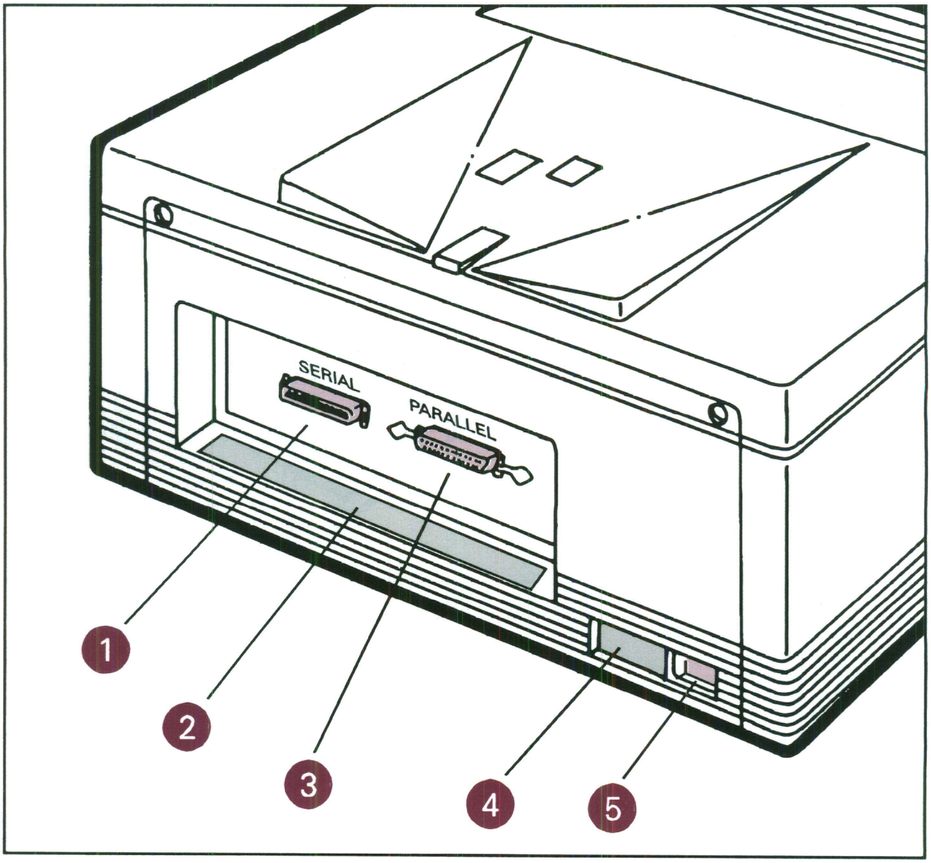


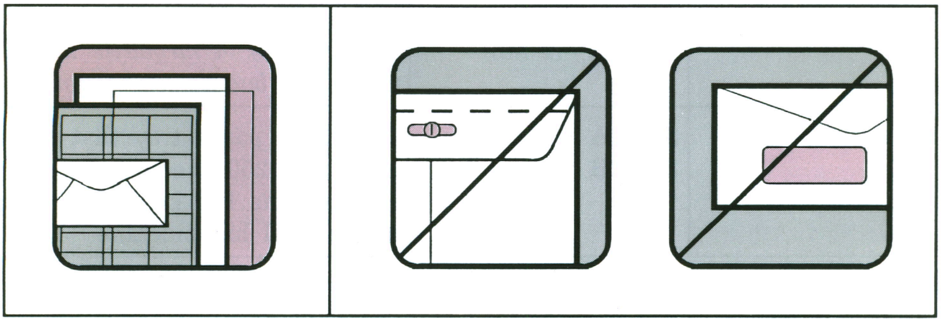
Figure 1-7. Back of the Printer

1. Serial interface port
2. Model number/certification label
3. Parallel interface port
4. Serial number/power rating
5. Power cord receptacle

Guidelines for Buying Paper and Other Print Media

The HP LaserJet IIIP printer is designed to use a wide variety of paper, labels, transparencies and envelopes. However, not all print media is suitable for use with laser printers.

For example, you must be sure that envelopes do not have clasps that could damage the printer mechanism, or windows that could melt in the toner fusing process.



Refer to appendix E, "Selecting Paper and Other Print Media" for complete information on selecting the appropriate paper and other print media for use with your printer prior to purchase.

Upgrading Your Printer with Accessories

You can increase the capabilities of the HP LaserJet IIIP printer by adding the following accessories. For ordering information, see the *HP LaserJet Accessory Catalog* or the inside front cover of this manual.

Table 1-1. Printer Options

Accessory	HP Part Number	Uses
Memory Board	33474B - (1 Mb) & 33475B - (2 Mb)	Provides 1 or 2 megabytes of additional memory - for full page 300 dpi graphics. *4 megabyte maximum - up to two boards maximum.*
Optional Lower Cassette	33472A - letter 33472B - A4	Includes a paper tray that holds an additional 250 sheets of paper, converts the HP LaserJet IIIP printer into a dual bin machine.
Extra paper trays for the Optional Lower Cassette	92275B - letter 92275C - legal 92275D - A4 92275E - Executive	Holds 250 sheets - letter, legal, executive, or A4 paper sizes.
Envelope Tray for the Optional Lower Cassette	92275F - envelopes	Holds 20 envelopes in Optional Lower Cassette Base.
Extensive Font Collection	See *HP LaserJet Accessory Catalog*	Enhances your printing capabilities.
RS-422 Adapter	92270N	Attaches to RS-232 serial interface port.
EP-L Toner Cartridge	92275A	Toner cartridge for HP LaserJet IIIP printer, black print.

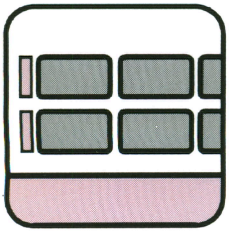
Note

The HP LaserJet IIIP printer accomodates all HP LaserJet IIP printer accessories, such as the Optional Lower Cassette and memory boards.

2

Using the Printer Control Panel

Introduction

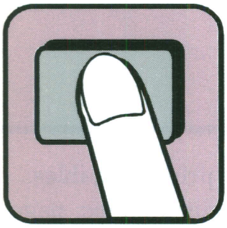


The control panel of the HP LaserJet IIIP printer enables you to set up the printer for a variety of printing jobs, page formats, and printer interface configurations.

This chapter tells you:

- When to use the control panel.
- The layout of the control panel.
- How to use keys and indicators.
- How to select items in the Printing Menu.
- How to select items in the Configuration Menu.
- How to print and understand self test pages.
- The printer's default settings.
- How to select the local display language.

When to Use the Control Panel



Ideally, your computer's software will send all the necessary commands to set up your print jobs. **Software commands will override most of the corresponding control panel settings.** However, the degree of printer support varies among software manufacturers. Hewlett-Packard has designed the control panel to enable you to make selections manually when your software application does not.

Here are some of the main reasons you would want to use the control panel:

- To inform the printer you changed the size of the paper in the Multi-Purpose tray.
- To make a print selection your software does not allow you to make, such as symbol set selection.
- To print a partial page of data.
- To identify the available printer fonts using the Font Printout.
- To reset the printer.
- To print a diagnostic self test.
- To generate a sheet of Cleaning Paper.
- To switch between on-line and off-line status.
- To configure the printer's interface.

Note

Remember, commands issued through a software application will override control panel selections.

Control Panel Layout

The control panel consists of the following parts:

- The display.
- The indicators.
- The keys.

The following figure shows the control panel layout:

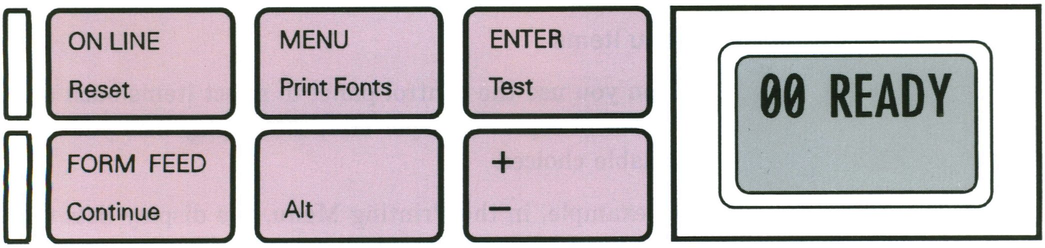
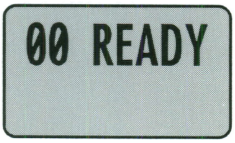

ON LINE
Reset
MENU
Print Fonts
ENTER
Test
FORM FEED
Continue
Alt
+
−
00 READY

Figure 2-1. The Control Panel

The Control Panel Display

The display shows:

- Printer messages.
- Menu items and their associated selectable values.
- The Processing-Data icon.
- The Selection-Made icon.



Printer Messages

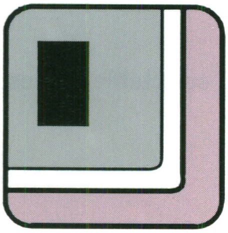
As you use your printer, you will often see **printer messages**. These messages keep you aware of the printer's current operating mode.

For example, 00 READY in the first line of the display tells you that your printer is ready to perform a printing task. See chapter 8 for a complete list of printer messages.

Menu Items

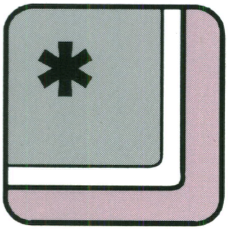
When you use the control panel to select items such as number of copies or paper size, the display lists your available choices.

For example, in the Printing Menu, the display lists the numbers 1-99 as the number of copies choices.



Processing-Data Icon

This icon appears as a black rectangle in the lower-right corner of the display. The black rectangle blinks off and on when the printer is receiving data or processing data into a print image.



Selection-Made Icon

This icon appears as an asterisk (*) in the lower-right corner of the display. This asterisk appears after you click the ENTER key to select and save the currently displayed menu choice. As you step through the menu choices, you will see an asterisk (*) next to the choice currently selected (the current default setting).

The Control Panel Indicators

The control panel has the following indicators:

- On-Line indicator.
- Form Feed indicator.

The following figure shows the control panel indicators:

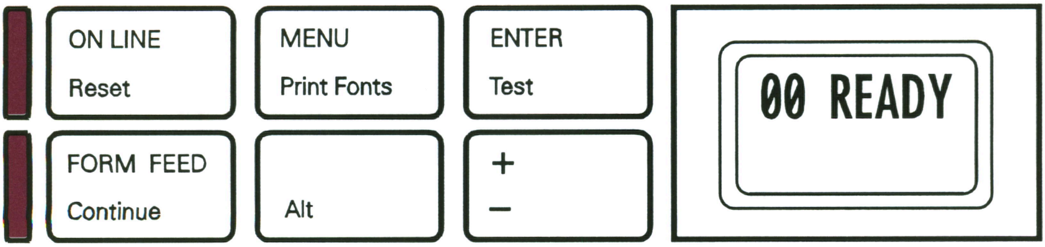
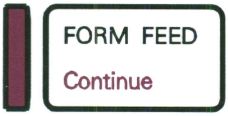

ON LINE
Reset
MENU
Print Fonts
ENTER
Test
00 READY
FORM FEED
Continue
Alt
+
−

Figure 2-2. The Control Panel Indicators

ON LINE
Reset

On-Line Indicator

The plastic indicator to the left of the ON LINE key is lit when the printer is on-line and ready to receive data. If the indicator is not lit, the printer is off-line. If you take the printer off-line while it is printing, the indicator flashes as it attempts to finish printing and go off-line.



Form Feed Indicator

The plastic indicator to the left of the FORM FEED key is lit when there is print data stored in the printer's memory. This indicator flashes while data in the memory is being printed after you click the FORM FEED key. The indicator also flashes when information, such as a soft font, is being downloaded to the printer.

If the printer finishes printing a job, but the Form Feed indicator remains on, there is still print data in the printer's memory that has not been printed. Take the printer off-line and click FORM FEED to print the stored data.

If you turn off the printer or perform a control panel reset when the Form Feed indicator is lit, you will lose the data stored in memory.

The Control Panel Keys

The control panel has the following keys:

- ON LINE/Reset.
- FORM FEED/Continue.
- MENU/Print Fonts.
- Alt.
- ENTER/Test.
- +/−.

Several of the keys perform two functions, such as the MENU/Print Fonts key. To perform the function listed on the top of a control panel key, momentarily press and then release the key. This action is called "clicking" the key.

To activate the function listed on the bottom of a key (in red), press and hold down the Alt key while you click the desired key.

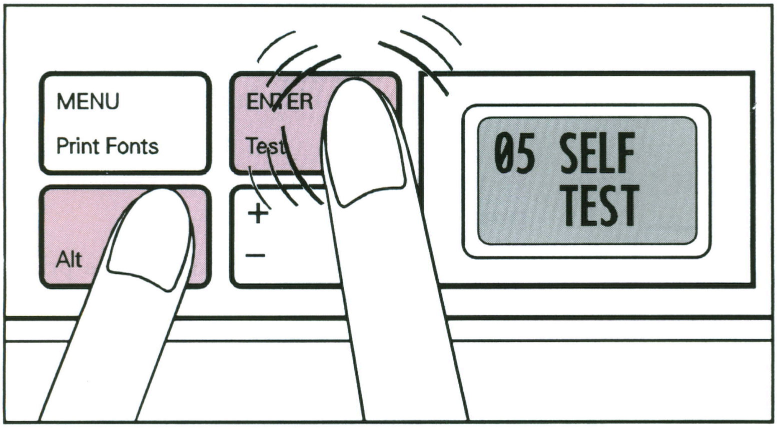


Figure 2-3. Using the Alt Key to Access Other Functions

The ON LINE Key

ON LINE
Reset

This key switches the printer between a ready-to-receive data state, called **on-line**, and a not-ready-to-receive data state, called **off-line**. To take the printer *off-line* or put it *on-line*:

- Click the ON LINE key.

If you are sending data from your computer to your printer, the printer must be placed on-line (the green On-Line indicator is lit.)

The FORM FEED Key

FORM FEED
Continue

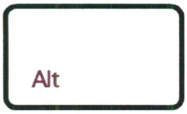
Clicking the FORM FEED key tells the printer to print all the stored print data, if any. Clicking the FORM FEED key does not force a blank sheet of paper through the printer.

If the last page stored in the printer's memory is not a full page, and if your software does not send a command to print this data, the Form Feed indicator will remain lit.

To print out this stored data:

- Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
- Click the FORM FEED key. The stored print data will print.
- Click the ON LINE key to put the printer back on-line. The green On-Line indicator will go on.

The ALT Key

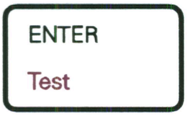


To use the functions listed on the bottom half of the control panel keys:

- Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
- Hold down the Alt key and click the desired key.

For example, holding down the Alt key and clicking the Print Fonts key accesses the print fonts function, producing a Font Printout.

The Test Key



The Test key can be used to perform a self test. To perform a self test:

- Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
- Hold down the Alt key and click the Test key. 05 SELF TEST appears. This causes the printer to test its built-in controller. The self test takes approximately 30 seconds to complete, and will take longer if accessory memory boards have been installed.

Note

If 04 SELF TEST appears, click the ON LINE key to stop the continuous self test. Up to 6 more pages will print. 04 SELF TEST appears when you hold down the Test key for more than 5 seconds while performing a self test.

During the print portion of the self test, the printer displays `06 PRINT TEST` and prints out two pages. One page contains test patterns and a list of the current printer settings. Refer to "Understanding the Self Test" later in this chapter for an explanation of the self test. The second page printed during a self test is the printer generated **cleaning paper**. Use this cleaning paper to clean the printer when changing toner cartridges. Refer to "Cleaning the Printer" on page 7-13.

The Print Fonts Key

MENU
Print Fonts

To produce the Font Printout which shows all the fonts that are available in the printer:

- Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
- While holding down the Alt key, click the Print Fonts key. A Font Printout is generated. There may be some delay in printing the Font Printout while the printer creates the fonts.

Several pages showing samples of characters from each font currently available in the printer will print. The Font Printout is explained in chapter 6.

The Continue Key

FORM FEED
Continue

To override printer messages and return the printer on-line:

- Hold down the Alt key and click the Continue key. The printer message should clear.

Printer messages and their recommended actions are described in chapter 8.

You can also use the Continue key to override a request to load paper of a different size than you currently have in the input tray. For example, if the printer displays the `MP LOAD LEGAL` and you have letter-size paper in the Multi-Purpose tray, using Continue puts the printer back on-line.

The printer then begins printing the data it receives, having formatted it to the requested size (legal), but printing on the paper available (letter). If the paper in the tray is not the same size as the requested size, some printed data may be missing (clipped), or the page may be formatted to an odd size.

Note

When print data is clipped by overriding a paper request, black streaks may appear on the back of the next printed page.

The Reset Key

ON LINE
Reset

The Reset key allows you to perform two types of printer resets, a Printer reset (07 RESET) and a Printing Menu reset (09 MENU RESET).

Printer Reset (07 RESET)

To clear all software settings, temporary soft fonts, temporary macros, and stored print data from the printer memory, and to tell the printer to begin using the user-selected defaults from the control panel:

Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.

Hold down the Alt key and click the Reset key. The display shows 07 RESET.

Perform a Printing Menu reset when the printer needs to be returned to the Printing Menu selections you have made through the control panel. These selections are the "user default settings."

Caution

Performing a reset while a job is printing may cause data loss.

Printing Menu Reset (09 MENU RESET)

A secondary function of the Reset key is the `09 MENU RESET`, which returns all Printing Menu items (including your `TRAYS` selection *if* you have an Optional Lower Cassette installed) to their factory default settings (listed later in this chapter). Menu reset also clears temporary soft fonts, temporary macros, and stored print data from the printer's memory.

Note

The `MP SIZE`, `RET`, `AUTOCONT`, `PAGEPRO.` and `I/O` settings do not change when you perform a Printer reset or Printing Menu reset.

To access the Printing Menu reset function:

- Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
- Hold down the Alt key, and at the same time hold down the Reset key for at least 5 seconds, until `09 MENU RESET` appears in the display.

The MENU Key

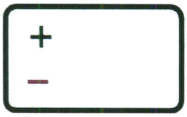
MENU
Print Fonts

The MENU key allows you to access the Printing and Configuration Menus.

The Printing Menu allows you to select user default job and page formatting choices from the control panel, if you cannot specify these choices through your software. See "Selecting Printing Menu Options" later in this chapter.

The Configuration Menu allows you to make selections to configure your printer so it will communicate with your computer. The Configuration Menu also allows you to change the Resolution Enhancement (RET), Page protection, Autocontinue, and interface settings. See "Selecting Configuration Menu Options" later in this chapter.

The +/— Key



The +/— key allows you to display the next (+) or previous (−) value for the current Configuration or Printing Menu item. For example, if the display shows `COPIES 3`, clicking the + changes the message to `COPIES 4`. Holding down the Alt while clicking the — key changes the message back to `COPIES 3`.

Holding down either of these keys scrolls quickly through all of the choices available for that menu item.

The ENTER Key

The ENTER key allows you to select Printing and Configuration Menu choices, or access the Configuration Menu.

To select Printing and Configuration Menu choices:

- Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
- Use the MENU key and the +/— to find your choice.
- Click the ENTER key.

  After you click the ENTER key, an asterisk (*) appears next to your choice, showing it has been saved. When the printer is placed back on-line, the printer is automatically reset.

Selecting Printing Menu Items

This section describes the items available in the Printing Menu. Listed in order of appearance, these items include:

- `MP SIZE` (size of paper loaded in Multi-Purpose tray).
- `COPIES` (number of copies).
- `FONT SRC` (font source).
- `FONT NUM` (font number).
- `PT. SIZE` (height of the font in points).
- `PITCH` (number of characters per horizontal inch).
- `TRAYS` (input trays).
- `JOB SIZE` (printed image size).
- `ORIENT` (orientation).
- `LINES OF TXT` (lines of text).
- `MAN FEED` (manual feed).
- `SYM SET` (symbol set).
- `DEVICE CONFIG` (the Configuration Menu).

Note

Most software applications select the Printing Menu items discussed in the following paragraphs. If you know that your software allows you to specify these menu items (such as number of copies, font changes, etc.) you do not need to read this section further.

Example

The following example shows you how to select a Printing Menu item.

- Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
- Click the MENU key until the Printing Menu item that you want to change appears in the first line of the display (for example, `COPIES`).
- Click the +/— key until the value you want to set for that Printing Menu item is displayed (for example, 3).
- Click the ENTER key to save your choice. An asterisk (*) appears in the display.
- Click the ON LINE key to put the printer back on-line.

MP Size

The first item displayed is usually `MP SIZE`. Because the Multi-Purpose (MP) tray does not have sensors to tell the printer what size paper is being used, you must use the control panel to give the printer this information.

Your choice will remain as the selected `MP SIZE` until you change it again, using the control panel. A Printer reset or Printing Menu reset does not affect this setting.

Refer to "Using the Multi-Purpose Tray" on page 3-3, or "Using the Optional Lower Cassette" on page 4-3. These sections give complete instructions on setting the `MP SIZE`, `TRAYS`, and `JOB SIZE` menu items.

Note

If you have an Optional Lower Cassette installed and you have configured the menu item `TRAYS LC ONLY*`, `MP SIZE` does not appear. Instead, the first menu item as you enter the Printing Menu is `COPIES`.

Number of Copies To Print

The `COPIES` menu item tells the printer how many copies of each page to print. You can print up to 99 copies. The printer does not collate the pages. Rather, it will print the requested number of the first page, and then print the requested number of the next page, and so on.

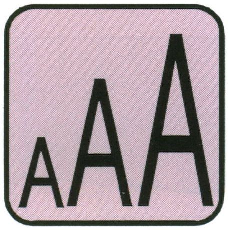
Font Source and Font Number

The `FONT SRC` and `FONT NUM` menu items allow you to select the default font. If you do not know the source and font number, print a Font Printout to find out. (See "The Font Printout" on page 6-19.)

Note

If you change to a new page orientation or font symbol set, the control panel font selection returns to the factory default setting. You must then select your font again using the Printing Menu as described in chapter 6. Because font numbers change, be sure to check the font number on the new Font Printout.

Changing Pitch and Point Size

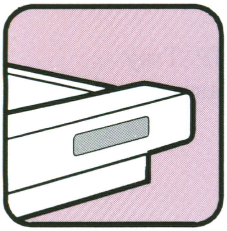


If the font indicated by your `FONT SRC` and `FONT NUM` selections is a scalable typeface with **proportional spacing**, the Printing Menu allows you to select a *point size* (`PT. SIZE`). **Point Size** is a measure of the vertical height of a font (refer to chapter 6 for more information).

If the font indicated by your `FONT SRC` and `FONT NUM` selections is a scalable typeface with **fixed spacing**, the Printing Menu allows you to select a *pitch* (`PITCH`). **Pitch** refers to the number of characters printed in a horizontal inch. When using scalable typefaces with fixed-spacing, the pitch you select also determines the height of the character.

(Refer to chapter 6 for an explanation of fixed-spaced versus proportionally-spaced fonts.)

Trays



The `TRAYS` menu item will only appear in the Printing Menu if you have installed the Optional Lower Cassette. The choices under the `TRAYS` item allow you to program the printer to use paper from the Multi-Purpose (MP) tray, the Optional Lower Cassette (LC) tray, or from both trays.

You can use the printer's dual-bin capability to increase the amount of paper you can place in the printer and to enable the printer to hold two different types of paper. For example, you can place plain paper in the Optional Lower Cassette and letterhead or envelopes in the Multi-Purpose tray.

You can set up the printer to feed from either input tray as shown in figure 2-4.

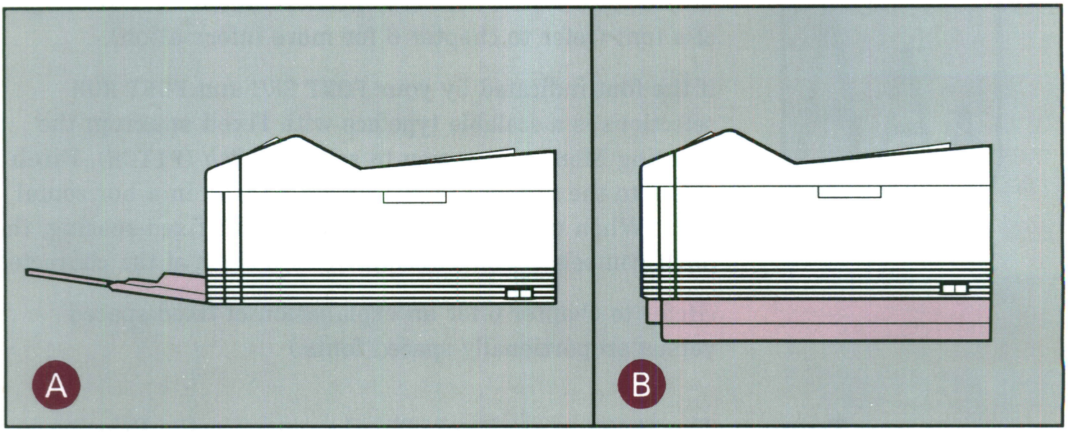


Figure 2-4. Input Trays

Ⓐ Multi-Purpose - MP Tray
Ⓑ Optional Lower Cassette - LC Tray

TRAYS LC ONLY

When you install the Optional Lower Cassette, the Printing Menu item, `TRAYS LC ONLY *` appears. This selection is the factory default setting. It directs the printer to feed paper automatically from the Optional Lower Cassette *only*.

Note

If `TRAYS LC ONLY` is selected, the Multi-Purpose tray will *only* be used when you select manual feed from the control panel or application software, or use the Optional Lower Cassette override feature, MP priority feed. Refer to page 4-11 for information on the MP priority feed.

TRAYS BOTH

If `TRAYS BOTH` is selected, and both trays contain the same size paper, the printer begins printing from the Optional Lower Cassette. When the Optional Lower Cassette tray is empty, the printer continues printing from the Multi-Purpose tray (if you have set the `MP SIZE` on the control panel to match the size of paper in your Optional Lower Cassette).

If the trays contain different sizes of paper and the `MP SIZE` setting matches the size of the paper in the Multi-Purpose tray, the printer will automatically pull paper from the tray with the paper size that matches the `JOB SIZE` menu selection or the job size sent by your software.

TRAYS MP TRAY

If `TRAYS MP TRAY` is selected, the printer pulls paper automatically from the Multi-Purpose tray. The printer will pull paper from the Optional Lower Cassette only when your software sends a command to do so.

TRAYS LC TRAY

If `TRAYS LC TRAY` is selected, the printer pulls paper automatically from the Optional Lower Cassette. The printer will pull paper from the Multi-Purpose tray only when your software sends a command to do so, or during an attended manual feed.

Job Size

The printer uses the `JOB SIZE` setting to format computer data for each page into an image before it pulls the physical piece of paper from an input tray.

Many software packages allow you to select the "paper size" (called "job size" in the HP LaserJet IIIP printer) through menus in the software program. When you choose paper size in this way, the formatting commands from your software will override the `JOB SIZE` selection in the printer's control panel. Refer to *Software Application Notes* for more information.

If your software application does not send a printer command telling the printer what size image to use for text, the printer formats the data to the image size specified in the control panel `JOB SIZE` item. **If this is the case, you should make sure the current control panel `JOB SIZE` setting matches the `MP SIZE` or the Optional Lower Cassette tray size.**

`JOB SIZE` allows selection from four image sizes to fit four physical *paper* sizes, and from four image sizes to fit four *envelope* sizes. See figure 2-5.

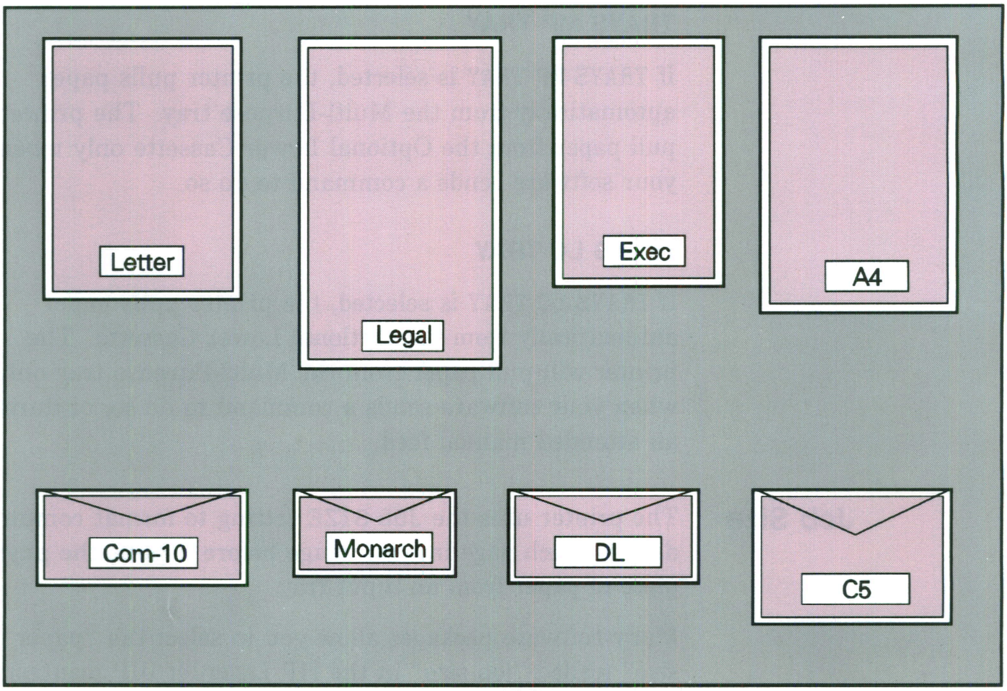


Figure 2-5. Job Size

Printing on Odd-Sized Paper

If you are printing on paper that is a different size from any of the `JOB SIZE` selections available on the control panel, select a `JOB SIZE` (and `MP TRAY SIZE`, if applicable) that is slightly larger than your actual paper size. Then change the margins in your software so that the printed image will fit on the paper you want to use.

Note

The HP LaserJet IIIP printer can only print on paper that meets the minimum and maximum page size requirements listed in chapter 3.

Orientation

Orientation refers to the direction of the print on a page. Printing along the short edge (width) of a page is **portrait** orientation (see ① in figure 2-6), and printing along the long edge (length) of a page is **landscape** orientation (see ② in figure 2-6).

Figure 2-6 shows pages printed in portrait and landscape orientation.

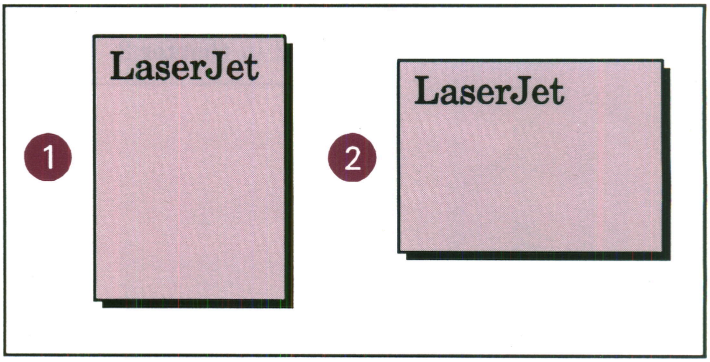


Figure 2-6. Page Orientation

① Portrait Orientation
② Landscape Orientation

The HP LaserJet IIIP printer can rotate all fonts to make any font available in both portrait and landscape orientation. For example, if you want to print in landscape orientation, and the font you select is a portrait font, the printer can automatically rotate the font into landscape. See chapter 6, "Using Type and Fonts," for more information on font rotation.

Lines of Text

This menu item selects the default form length setting. Change this setting only if your software does not allow you to select lines-per-page or lines-per-inch.

The most common form-length settings are:
`LINES OF TXT 60` for letter-size paper, and
`LINES OF TXT 78` for legal-size. These settings are the HP LaserJet IIIP printer's default lines of text settings.

This menu item is used to set the number of lines printed per page. Because the printer spreads the number of lines you select to fill the vertical dimension of the `JOB SIZE`, the lines-of-text you choose also determines the number of lines-per-inch on the printed page.

To determine the lines-of-text choice, you need to:

1. Subtract one inch from your paper length to allow for default top and bottom margins to get the image length.
2. Multiply the image length by the number of lines-per-inch you want.

For example, if you use `LETTER` ($8\frac{1}{2}$ x 11 inch) paper as the default paper, subtract one inch from the 11 inch length to leave an image length of 10 inches. Then if you wanted to print six lines-per-inch on this paper, you would multiply 10 (image length) by 6 (lines-per-inch) to get 60. You would select `LINES OF TXT 60`.

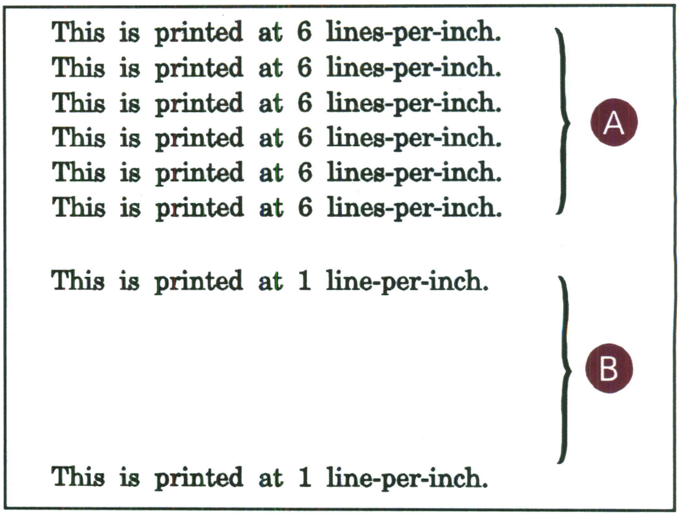

This is printed at 6 lines-per-inch.
This is printed at 6 lines-per-inch.
This is printed at 6 lines-per-inch.
This is printed at 6 lines-per-inch.
This is printed at 6 lines-per-inch.
This is printed at 6 lines-per-inch.
A
This is printed at 1 line-per-inch.
B
This is printed at 1 line-per-inch.

Figure 2-7. Lines-of-Text

Ⓐ 6 lines-per-inch
Ⓑ 1 line-per-inch

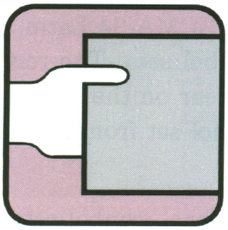
If you change the job size, or change the page orientation from portrait to landscape, or *vice versa*, the printer automatically performs the calculations necessary to print the same number of lines-per-inch as specified in the original page definition.

Note

If your software page length setting exceeds the current `LINES OF TXT` control panel setting, the top margin creeps lower on each successive page printed. This problem is called **creeping text**.

To correct this problem, make sure that your software's page length setting is equivalent to your control panel's lines-of-text setting.

Manual Feed

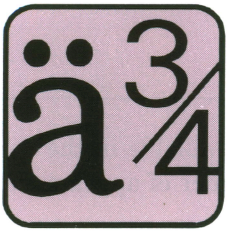


When the HP LaserJet IIIP printer's manual feed selection is set to on, you can feed the printer individual envelopes or occasional sheets of paper or other print media by hand, one at a time. You may want to use this feature if your software does not have a manual feed selection.

With the HP LaserJet IIIP printer, use the Multi-Purpose (MP) tray for manual feed. The Optional Lower Cassette cannot be used for manual feeding.

For specific instructions on using manual feed, refer to page 3-16.

Symbol Sets



A **symbol set** is a collection of alphabetic, numeric, punctuation and special-purpose symbols. Table 2-1 shows the names of internal symbol sets you can select from the control panel.

Table 2-1. HP LaserJet IIIP Printer Selectable Symbol Sets

Internal Scalable Typefaces and Bitmapped Fonts		Internal Scalable Typefaces Only	
Roman-8	ECMA-94 Latin 1	VN Math	VN Intl
PC-8	PC-8 D/N	VN US	PS Math
PC-850	Legal	PS Text	Math-8
ISO-nn*	German	PI Font	MS Publ
Spanish		Windows	DeskTop

*nn= 2,4,6 (US ASCII), 10, 11, 14, 15, 16, 17, 21, 25, 57, 60, 61, 69, 84, or 85.

The Font Printout shows some of the symbol sets for installed cartridges and downloaded soft fonts. Internal fonts are only shown in Roman-8, ECMA-94 Latin 1, PC-8, PC-8 D/N, PC-850, and Legal symbol sets. The remaining selectable internal symbol sets appear on the Font Printout only if selected as the default symbol set from the control panel.

Some font cartridges also have internal symbol sets that are not displayed on the font printout. These symbol sets are selectable by printer commands. See your font cartridge documentation for more information.

See appendix B for symbol set and character identification maps.

Selecting Configuration Menu Items

This section describes the items available in the Configuration Menu. Listed in order of appearance, these items include:

- `AUTOCONT` (Auto continue).
- `I/O` (Interface type and configuration).
- `RET` (Resolution Enhancement technology).
- `PAGEPRO.` (Page protection).

You will probably select these menu items only once, when you first set up your printer.

Example

The Configuration Menu is the last item on the Printing Menu. To access the Configuration Menu and make changes to the Configuration Menu items:

1. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
2. Click the MENU key repeatedly until you see `DEVICE CONFIG` on the printer display.

3. Click the ENTER key.
4. AUTOCONT will appear in the first line of the display. You are now in the Configuration Menu.
5. Click the MENU key until the Configuration Menu item you want to change appears in the first line of the display (for example AUTOCONT).
6. Click the +/− key until the value you want to set for that Configuration Menu item is displayed (for example OFF).
7. Click the ENTER key to save your choice. An asterisk (*) appears in the display.
8. Click the ON LINE key to put the printer back on-line.

Auto Continue

Auto Continue refers to the way several error messages are handled:

- When you select AUTOCONT OFF*, certain printer messages remain in the display until you either correct the problem, tell the printer to continue, or both. For example, if the 20 MEM OVERFLOW message appears, the printer *stops printing* until you press and hold the ALT key and then click the CONTINUE key to return the printer on-line.
- When you select AUTOCONT ON*, certain printer messages remain on the display for only about 10 seconds. Then, the 00 READY message appears and the printer resumes printing.

Note

We recommend you operate the printer with AUTOCONT OFF* so that you have time to see the printer messages and take appropriate action. If your printer is part of a network, remote, or spooling system, set AUTOCONT ON*.

Interface Type and Configuration

The HP LaserJet IIIP printer comes with 2 standard interfaces. Using the `I/O` Configuration Menu item, you can select:

- Parallel (Centronics).
- Serial (RS-232C).

Note

The parallel interface that comes with your printer is a *Centronics parallel interface.* References to a "parallel interface" throughout this manual imply the Centronics parallel interface.

Refer to your *HP LaserJet IIIP Printer Getting Started Guide* for more setup information. Change the menu selections as appropriate for the interface you are using. For setup information on the accessory RS-422A adapter, refer to appendix D.

Resolution Enhancement

Resolution Enhancement improves the print quality of characters and graphics by "smoothing" the fine gradations along the edges of printed images. This process sets a new standard of print quality for 300 dpi (dots per inch) printing.

Figure 2-8 illustrates two magnified images, one with Resolution Enhancement set to `OFF` and the other set to `MEDIUM`.

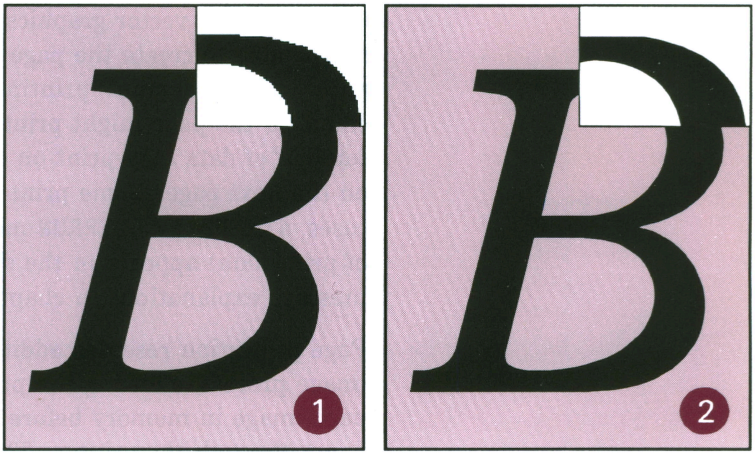


Figure 2-8. Resolution Enhancement Examples

① RET=OFF ② RET=MED

The Resolution Enhancement option has four choices: `DARK`, `MEDIUM`, `LIGHT`, and `OFF`. The factory default setting is `MEDIUM`. You may discover that a different setting, such as `DARK` works better for your printer. Refer to "Optimizing Print Quality with Resolution Enhancement" on page 7-27 for information about experimenting with different selections to optimize print quality with Resolution Enhancement.

Page Protection

Page protection appears as a Configuration Menu option *only* if you have at least 1 megabyte of additional memory installed.

Sometimes, if the text on a page is very dense, or if you are using complex vector graphics or rules, your printer may not be able to create the page image fast enough to keep pace with the engine's printing process. If a page is too complex, the page might print in parts. For example, the top half of data may print on one page and the bottom half on the next page. Some print data loss is likely. In such cases, a `21 PRINT OVERRUN` message (signifying possible loss of print data) appears in the display. (Refer to the printer message explanations in chapter 8.)

Page protection reserves additional memory for the page image process, allowing the printer to create the entire page image in memory before physically moving the paper through the printer. This process ensures that the entire page will be printed. You can set page protection for `LETTER`, `A4`, or `LEGAL` size pages. Set page protection for the size you expect to use most often. After you set page protection, the printer displays `17 MEM CONFIG` as it reconfigures its memory for page protection. The printer then performs an internal self-test and automatically returns on-line.

The printer's memory is reconfigured every time you change the page protection level. Changing page protection causes the printer to reserve or release memory as follows:

Size	Amount of Memory
LETTER or A4:	1065 Kbytes
LEGAL:	1264 Kbytes

Note

When memory is reconfigured for page protection, the printer erases all downloaded fonts (including permanent fonts) and all macros (including permanent macros). You must then reload any fonts and macros you need.

Because page protection formats an entire page of print data before it starts to print, you may see a slight degradation in print speed. Use page protection when using software applications that would otherwise cause a `21 PRINT OVERRUN` message. To maximize print speed, set page protection to OFF.

Printer Default Settings

Before shipping your printer, Hewlett-Packard programs the Printing and Configuration Menus with default settings. These settings are called **factory default** settings. When you use the control panel to select a new choice for an item, you are establishing a new default setting. These are called **user-selected default settings**.

The term **default** refers to the menu setting the printer uses *unless* your software sends a printer command to override the corresponding control panel setting.

Note

Even though they override both Factory default and user-selected control panel settings, printer commands sent from software do not appear in the control panel menu.

Priority of Commands

As the printer formats output, it executes commands in this order:

- First, it checks for any software printer commands to specify the page format, number of copies, fonts, etc. For more information on software commands, see chapter 5.
- If there are no software commands, the printer will get its instructions from the user-selected control panel settings.
- Finally, if you have not sent a software command, or made any control panel selections, the printer will use the factory default control panel settings to set up the page definition.

Your printer continues to perform using these settings until it recieves a reset. To return the printer to its user-defined default settings (a Printer reset), perform a `07 RESET` (see page 2-10).

Factory Default Settings

If you don't send printer commands from your software or use the control panel to change the original settings, the HP LaserJet IIIP printer prints using the default settings set at the factory. These settings are stored in the printer's permanent memory. Tables 2-2 and 2-3 list the factory default settings and range of user selections on the Printing and Configuration Menus. To return the Printing Menu to its factory default settings, perform a `09 MENU RESET`. (See page 2-11.)

Table 2-2. Factory Default Setting — Printing Menu

Menu Item	Factory Default	Range of User Selectable Settings
MP SIZE*	LETTER	LETTER, LEGAL, EXEC, A4, COM-10, MONARCH, DL, C5
COPIES	1	1 through 99
FONT SRC	I (Internal)	I (Internal), C (Cartridge), S (Soft fonts)
FONT NUM	0	0 through 999
PITCH**	10.00	0.44 to 99.99 cpi
PT. SIZE**	12.00	4.00 to 999.75 points
TRAYS***	LC (Lower Cassette) ONLY	LC ONLY (Lower Cassette), BOTH, LC TRAY, MP TRAY (Multi-Purpose)
JOB SIZE	LETTER	LETTER, LEGAL, EXEC, A4, COM-10, MONARCH, DL, C5
ORIENT	P (Portrait)	P (Portrait), L (Landscape)
LINES OF TXT	60	5 through 128 lines per page
MAN FEED	OFF	ON, OFF
SYM SET	ROMAN-8	See appendix B

* The MP SIZE item does not appear if an optional Lower Cassette is installed and the TRAYS item is set to TRAYS LC ONLY.

** This menu item appears only if a scalable typeface is selected. Printer commands allow a wider range of point sizes and pitches.

*** The TRAYS item only appears if the Optional Lower Cassette is installed.

Table 2-3. Factory Default Setting—Configuration Menu

Menu Item	Factory Default	Range of User Selectable Settings
AUTOCONT	OFF	OFF, ON
I/O	PARALEL	PARALEL, SERIAL
BAUDRATE*	9600	300, 600, 1200, 2400, 4800, 9600,19200
ROBUST XON*	ON	OFF, ON
DTRPOLAR*	HI	HI, LOW
RET	MEDIUM	OFF, LIGHT, MEDIUM, DARK
PAGEPRO.**	OFF	OFF, LTR (letter), LGL (Legal), A4

* Appears only if a Serial interface is selected.

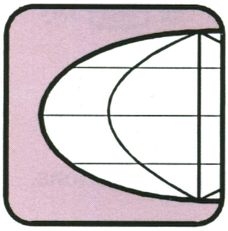
** Appears only if additional memory is installed.

User-Selected Default Control Panel Settings

If your software does not send the printer commands required to print pages the way you want, you can use the control panel to change the factory default settings. Your selections will be "remembered" by the printer when you turn the printer off. Your Printing Menu selections, called user-selected defaults, are used in place of the factory defaults. They will be used for printing until you return them to the factory default settings (09 MENU RESET), or you change them one-at-a-time using the control panel.

Refer also to "The Reset Key" section on page 2-10 for more information.

Displaying Messages in Other Languages



You may want your printer messages in a language other than English. You have a choice of ten languages with the HP LaserJet IIIP printer: English, French, German, Italian, Spanish, Swedish, Danish, Norwegian, Dutch, and Finnish.

To change to another language:

1. Turn off the printer.
2. Press and hold down the ENTER key while you turn the printer back on.
3. Release the ENTER key when `CONFIG LANGUAGE` appears. `SELF TEST` should then appear. Wait until `LANGUAGE ENGLISH` appears.
4. Click the +/— key to step through the language choices.
5. Click the ENTER key to select the language you want. An asterisk (*) will appear by your selection.

Note

Be sure to select a language by pressing the ENTER key. If you do not, the printer will default to English until it is turned off. Then each time you turn the printer on it will ask you to select a language by displaying `LANGUAGE ENGLISH`. The printer will continue to do this until you select a language using the ENTER key.

6. Click the ON LINE key to put the printer back on-line. The green On-Line indicator will come on. The printer messages should now display in the language you selected.

A reset will not affect language selection. To change languages you must again follow steps 1 through 6, above.

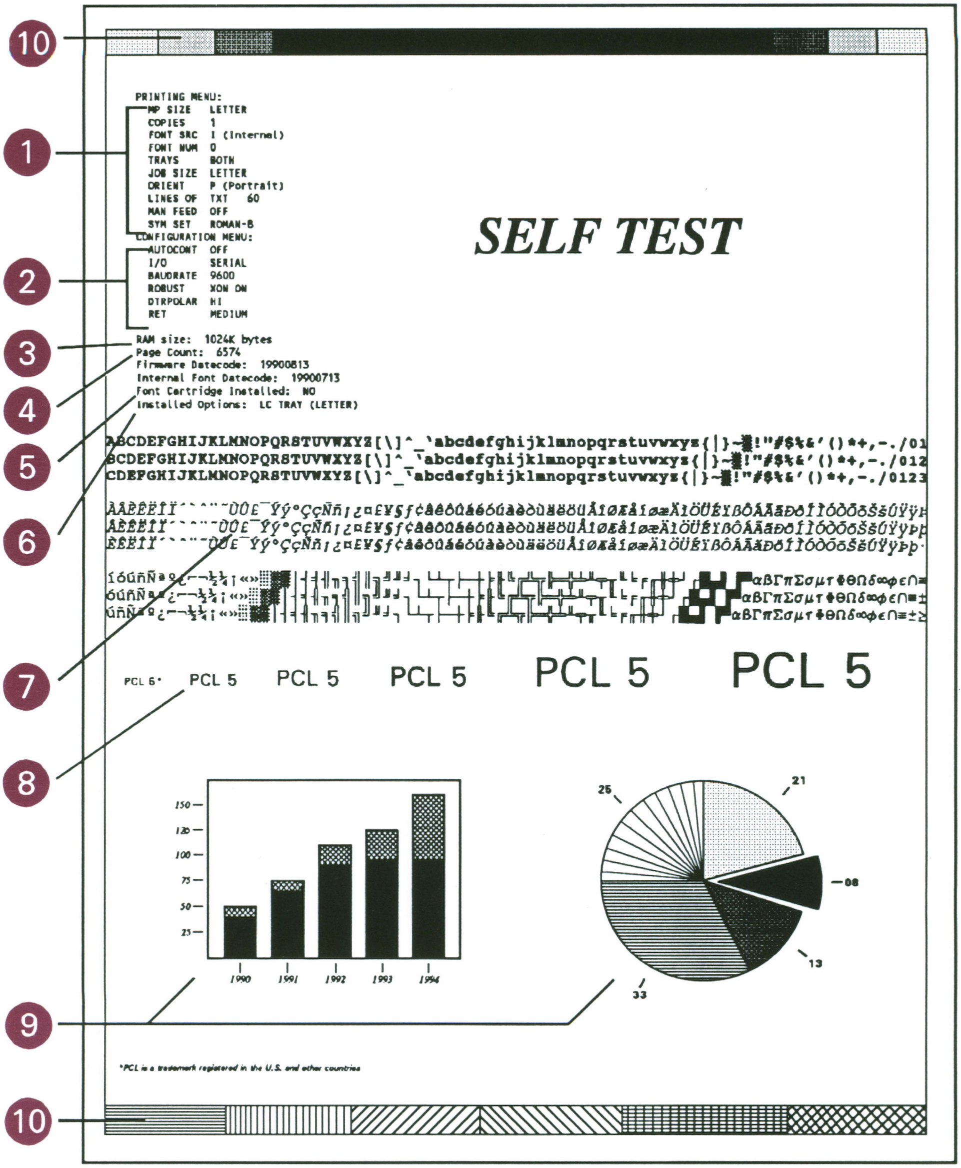
The Self Test Printout

Use the self test printout to check control panel selections and to help determine print quality. You can also run a self test to verify that options are installed properly (such as additional memory or a font cartridge). For information on generating a self test printout, refer to the Test key description earlier in this chapter.

Understanding the Self Test

The following pages describe the self test printout.

1. **Printing Menu** shows the current menu selections.
2. **Configuration Menu** shows the current menu selections.
3. **RAM size** shows how much memory is resident in the printer. (1024 Kbytes is standard.)
4. **Page Count** shows how many pages have been printed.
5. **Font Cartridge installed** shows if a cartridge is inserted.
6. **Installed options** shows if you have an Optional Lower Cassette installed, and which size tray you are using.
7. Use the print patterns to check print density and quality.
8. This line demonstrates the printer's ability to print with scalable typefaces.
9. The bar graph and pie chart test the printer's HP-GL/2 vector graphics capability. (The pie chart also serves as a check on the Resolution Enhancement quality. See "Optimizing Print Quality with Resolution Enhancement" on page 7-26 for more information).
10. Use the shading and cross-hatch patterns in the borders to check the print density and quality.



SELF TEST

```
PRINTING MENU:
  MP SIZE    LETTER
  COPIES     1
  FONT SRC   I (Internal)
  FONT NUM   0
  TRAYS      BOTH
  JOB SIZE   LETTER
  ORIENT     P (Portrait)
  LINES OF   TXT   60
  MAN FEED   OFF
  SYM SET    ROMAN-8
CONFIGURATION MENU:
  AUTOCONT   OFF
  I/O        SERIAL
  BAUDRATE   9600
  ROBUST     XON ON
  DTRPOLAR   HI
  RET        MEDIUM
RAM size:  1024K bytes
Page Count:  6574
Firmware Datecode:  19900813
Internal Font Datecode:  19900713
Font Cartridge Installed:  NO
Installed Options:  LC TRAY (LETTER)
```

10
1
2
3
4
5
6
7
8
9
10
PCL 5*
PCL 5
PCL 5
PCL 5
PCL 5
PCL 5
150
125
100
75
50
25
1990
1991
1992
1993
1994
25
21
08
13
33

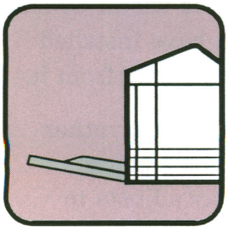
*PCL is a trademark registered in the U.S. and other countries

Figure 2-9. Self Test Printout

3

Printing from the Multi-Purpose Tray

Introduction



This chapter explains how to use the Multi-Purpose tray to feed paper and other print media into your printer.

The chapter explains how to:

- Use the control panel to select paper sizes.
- Load paper into the Multi-Purpose tray.
- Choose the correct paper output tray.
- Manually feed paper and other print media.

About the Multi-Purpose Tray

One feature that makes your HP LaserJet IIIP printer different from most previous Hewlett-Packard LaserJet printers is its **Multi-Purpose tray**. The Multi-Purpose tray is Hewlett-Packard's most flexible paper input tray. It supports several types and sizes of paper, making your printer very versatile without requiring you to buy a separate tray for each size of paper or print media you use.

The Multi-Purpose tray can be opened and closed, allowing you to make the printer very compact. This is useful when you are not currently printing or when you have installed an Optional Lower Cassette and wish to print only from it.

The Multi-Purpose tray allows you to feed paper or other print media automatically or manually. It holds paper, envelopes, labels, or transparencies. The tray adjusts to hold paper and other print media within the following dimensions:

- Width range: $3\frac{3}{4}$ *in to* $8\frac{1}{2}$ *in (96 mm to 216 mm)*
- Length range: $6\frac{3}{4}$ *in to* $14\frac{1}{2}$ *in (170 mm to 356 mm)*

Note

Within the specified dimensions, the Multi-Purpose tray feeds any size paper and other print media into the printer. However, you must use the control panel `MP SIZE` selection to tell the printer the physical size (or next largest available size) of the paper or other print media, and then use your software or the control panel `JOB SIZE` selection to set the dimensions of the printed image.

Using the Multi-Purpose Tray

To set up the printer to print from the Multi-Purpose tray, perform these four main steps:

1. Select the Multi-Purpose tray paper size (`MP SIZE`) using the control panel, and select the data formatting size (`JOB SIZE`) either manually using the control panel or by using your software.
2. Prepare the Multi-Purpose tray for paper.
3. Load the paper into the Multi-Purpose tray.
4. Select and set up the output tray you will use.

These steps are described in detail on the following pages.

Selecting the Control Panel Menu Items

To print from the Multi-Purpose tray, first ensure the following menu items are set properly using either your software or the control panel.

- `TRAYS` – Displays the tray from which the printer will pull the paper or other print media *if the Optional Lower Cassette is installed.* (The `TRAYS` menu item is not displayed if the Optional Lower Cassette is not installed.)
- `MP SIZE` – Displays the size paper or other print media the printer expects to be loaded in the Multi-Purpose tray. Because the printer can not sense what size paper or other print media is loaded in the Multi-Purpose tray, you must enter the `MP SIZE` setting correctly to ensure proper paper handling. *This setting can not be done through software.*
- `JOB SIZE` – Displays the size of the image that is going to print on your paper or other print media. (You should set `JOB SIZE` so that it matches the `MP SIZE` setting if your software does not.)

Selecting TRAYS

If you do not have an Optional Lower Cassette installed, the printer will not have a `TRAYS` setting. Skip to the next section, “Preparing the Multi-Purpose Tray” on page 3-7.

If you have an Optional Lower Cassette installed, the menu item `TRAYS` appears as you step through the Printing Menu. You must select `TRAYS MP TRAY` or `TRAYS BOTH` to print automatically from the Multi-Purpose tray. See “TRAYS - New Control Panel Item” on page 4-2 for more information.

Note

When you have an Optional Lower Cassette installed and the `TRAYS` selection menu item is set to `TRAYS LC ONLY *`, the Multi-Purpose tray can only be used for manual feed.

After you have set the `TRAYS` menu setting, continue with the next section, “Selecting MP SIZE.”

Selecting MP SIZE

Because the Multi-Purpose tray cannot detect the size of the paper or other print media you are using, you must enter this information. When you enter your `MP SIZE` selection you are telling the printer the *physical size* of the paper or other print media you are placing in the tray.

The `MP SIZE` menu item accommodates the paper sizes listed in table 3-1.

Table 3-1. MP Selection Sizes

Type	Choice	Size
Paper	`LETTER`	8 $\frac{1}{2}$ x 11 in
	`LEGAL`	8 $\frac{1}{2}$ x 14 in
	`A4`	210 x 297 mm
	`EXEC`	7 $\frac{1}{4}$ x 10 $\frac{1}{2}$ in
Envelopes	`COM10`	4 $\frac{1}{8}$ x 9 $\frac{1}{2}$ in
	`MONARCH`	3 $\frac{7}{8}$ x 7 $\frac{1}{2}$ in
	`C5` (ISO standard)	162 x 229 mm
	`DL` (ISO standard)	110 x 220 mm

Note The printer "remembers" your paper size selection, even after you reset the printer or turn it off. You do not need to re-enter the paper size until you decide to use another size paper in the Multi-Purpose tray.

To select a paper or other print media size for the `MP SIZE` menu item, use the following procedure:

1. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
2. Click the MENU key. `MP SIZE` appears in the first line of the display.

Note `MP SIZE` will not appear if `TRAYS LC ONLY*` is selected.

3. Click the +/- key until your choice appears.
4. Click the ENTER key to save your selection. An asterisk (*) appears.
5. Click the ON LINE key to put the printer back on-line.
6. Continue with the next section, "Selecting JOB SIZE."

Selecting JOB SIZE

As the printer receives data from the computer, it formats the data into a specific image size (refer to figure 2-5 on page 2-18 for more information). To determine that image size, the printer checks for a printer command from your software. *If* your software does not send a printer command for job size when it sends your data, you must make sure your control panel `JOB SIZE` menu item and the `MP SIZE` menu item match or an `MP LOAD` message may appear.

To select the `JOB SIZE`, proceed as follows:

1. Click the [ON LINE] key to take the printer off-line. The green On-Line indicator should be off.
2. Click the [MENU] key repeatedly until `JOB SIZE` appears in the first line of the display.
3. Click the [+/-] key until your choice appears.
4. Click the [ENTER] key to save your selection. An asterisk (*) appears next to your choice.
5. Click the [ON LINE] key to put the printer back on-line.
6. Continue with the next section, "Preparing the Multi-Purpose Tray."

Preparing the Multi-Purpose Tray

In addition to setting up the control panel for the correct paper (or other print media) size, you must also physically set up your printer to feed paper or other print media from the Multi-Purpose tray.

When you open the Multi-Purpose tray door you will see the parts identified in figure 3-1.

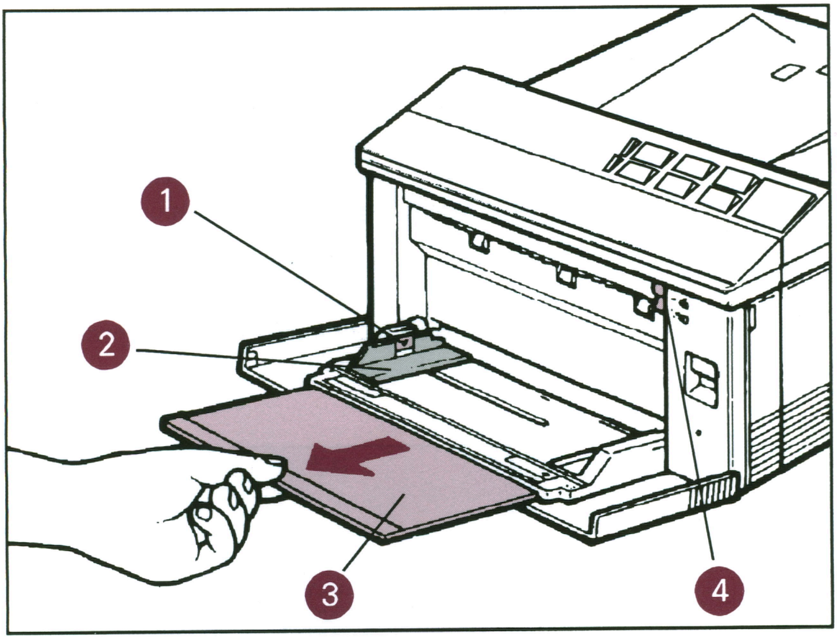


Figure 3-1. Multi-Purpose Tray

1. Paper fill arrow
2. Paper width adjuster
3. Multi-Purpose tray extender (extended)
4. Output tray selector button

Multi-Purpose Tray Extender

This part is built in to the door and pulls out to hold your paper. It is designed to allow the Multi-Purpose tray door to be closed easily. You may want to use only this built-in extender if you have an Optional Lower Cassette installed and plan to use the Multi-Purpose tray only occasionally, or if you expect to close the door to the Multi-Purpose tray frequently.

Enhanced Multi-Purpose Tray Extender

Your HP LaserJet IIIP printer comes with an accessory called the **enhanced MP tray extender**. This extender can be attached to the Multi-Purpose tray for added support of any size paper, especially legal paper.

If you have not purchased an Optional Lower Cassette, or plan to use the Multi-Purpose tray frequently, you may want to keep the enhanced Multi-Purpose tray extender attached.

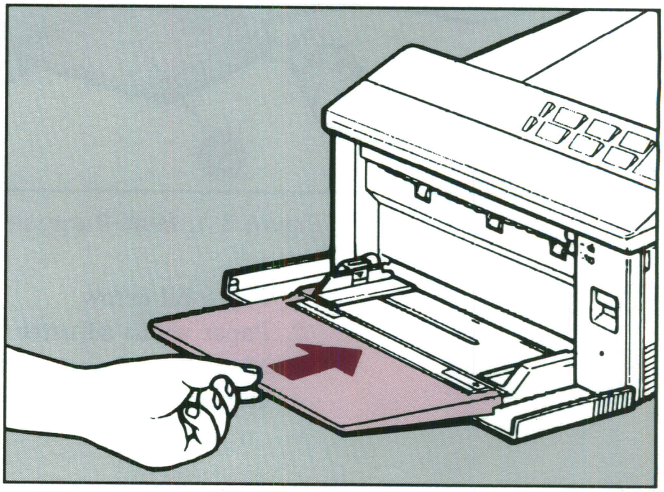


Figure 3-2. Attaching the Enhanced MP Tray Extender

When attaching the enhanced Multi-Purpose tray extender, begin by making sure the built-in Multi-Purpose tray extender is completely closed. Then slide the enhanced Multi-Purpose tray extender in snugly against the Multi-Purpose tray door. The lip of the enhanced Multi-Purpose tray extender fits on top of the Multi-Purpose tray door, and the lower tab fits underneath the Multi-Purpose tray door.

After you have prepared the Multi-Purpose tray, continue with the next section, "Loading the Multi-Purpose Tray."

Loading the Multi-Purpose Tray

You must load the paper or other print media into the Multi-Purpose tray correctly to produce properly place the print image on the page. Table 3-2 describes where and how to place each size of paper and other print media and which output tray to use. Pictures molded into the Multi-Purpose tray also show the correct placement of paper and envelopes.

Table 3-2. Multi-Purpose Tray Print Media Placement

Media	Placement	Output Tray
Paper	Side to be printed, face-down, top of page towards printer.	Use top output tray.
Transparencies	Side to be printed, face-down, top of page towards printer. Side down varies with manufacturers.	Use front output tray.
Label stock	Face-down, top of page toward printer.	Use front output tray.
Envelopes	Address side down, flap toward right.	Use front output tray.

Caution

When printing on envelopes, label stock, or transparencies, always use the front output tray to avoid excessive curling, severe paper jams, and potential damage to the printer.

Follow these steps to load paper into the Multi-Purpose tray.

1. Square all paper edges by holding the stack of pages loosely, and tapping the edge of the stack against a flat surface.
2. Insert your paper or other print media with the **print surface face-down**. Place it in as far as it will go, making sure that it is no higher than the tip of the arrow on the paper width adjuster (figure 3-3, Ⓐ).

Note

Most reams of paper have an arrow on the label that points to the side of the paper that should be printed on. Place paper so that this side is facing **down**.

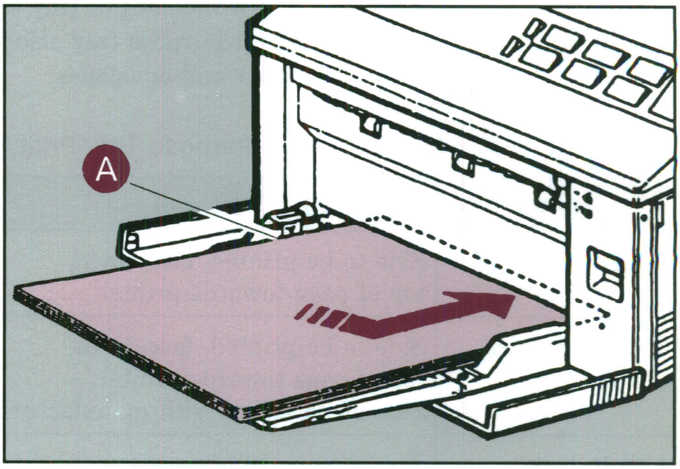


Figure 3-3. Placing Paper Forward in the Tray

3. Place your paper firmly against the right side, tucking it under the plastic paper guide on the forward edge.

Caution

Never add paper or other print media to the top of an existing stack in the Multi-Purpose tray while the printer is printing or a severe paper jam may occur.

4. Slide the paper width adjuster to touch the left side of the paper or other print media you have placed in the tray, figure 3-4 Ⓐ, and tuck your paper or other print media under the white plastic paper guide, figure 3-4 Ⓑ.

   The paper width adjuster ensures your paper is correctly fed into the printer. If your paper or other print media does not fit *squarely and firmly* between the paper width adjuster on the left side and the bar on the right side of the Multi-Purpose tray, it may not feed into the printer correctly. As a result, the printed image will be skewed on the page.

   Although the paper width adjuster should fit firmly, it should not cause the paper to bow.

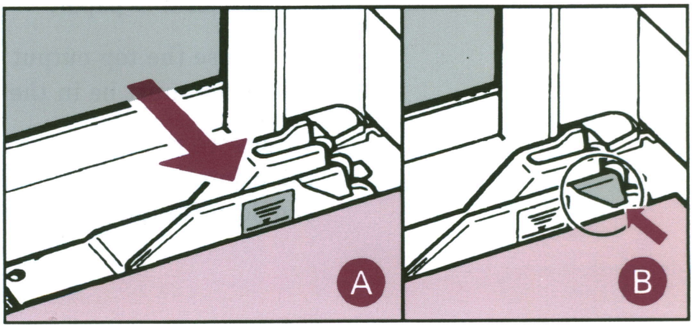


Figure 3-4.
Placing Paper Width Adjuster Flush Against Left Side

5. Continue with the next section "Selecting the Output Tray."

Selecting the Output Tray

There are two output trays on your HP LaserJet IIIP printer as shown in figure 3-5. Choose the output tray that is appropriate for your printing needs and continue to the next section, "Printing."

A. **Front output tray** - the pages exit the printer from the front into the attached face-up output tray, and stack face-up. *Use this tray for heavy paper stock (16-28 pound), envelopes, transparencies, and labels.* Using this tray will also help to reduce paper curl. The front output tray accomodates approximately 20 sheets of paper, 5 envelopes, or 10 sheets of label stock. To use the front output tray, the Output tray selector button must be in the down position. Refer to the *HP LaserJet IIIP Printer Getting Started Guide* for installation instructions.

B. **Top output tray** - the pages exit the printer from the top into the top output tray, and stack face-down in correct order. *Use this tray for printing on standard paper (16 to 28 pound).* It accommodates approximately 70 sheets of paper.

   To use the top output tray, the Output tray selector button must be in the up position.

To ensure your paper or other print media moves through the printer without jamming or double feeding, the paper should meet the guidelines outlined in appendix E.

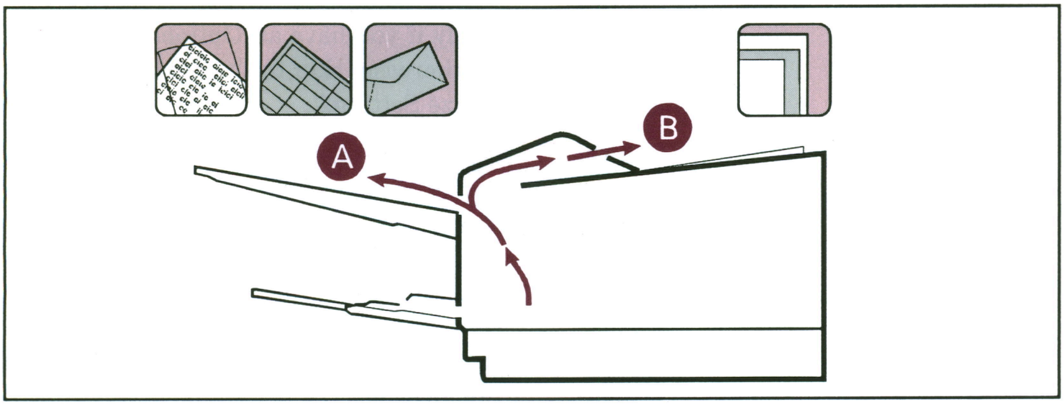


Figure 3-5. The Printer's Output Trays

Printing

Now that you have set up your Multi-Purpose tray for printing, loaded the paper or other print media, and selected your output tray, it is time to print your document.

Example - Printing Using Legal-Size Paper

The following example shows how to set up the printer to print on legal-size paper.

Let's assume you have been printing on letter-size paper (`MP SIZE LETTER*`). Now you want to print on legal-size paper from the Multi-Purpose tray. Your software does *not* send a printer command that selects a legal-size format size, so you need to change the selection for the control panel `JOB SIZE` as well as `MP SIZE`.

Before you begin, look at the display. If `00 READY LETTER` is displayed, proceed with the directions on changing MP SIZE on the next page.

If `00 READY` is displayed, but `LETTER` (or your `MP SIZE`) is not, the printer is telling you the Optional Lower Cassette is installed and the `TRAYS` menu item is set to `LC ONLY *`. For this example you must change the `TRAYS` menu item to `MP TRAY` to print from the Multi-Purpose tray.

Changing the TRAYS setting

Follow these steps only if you have an Optional Lower Cassette installed. Otherwise, skip to the next section "Changing the MP Size Setting."

1. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
2. Click the MENU key until `TRAYS` appears in the first line of the display.
3. Click the +/- key until the display shows `TRAYS MP TRAY`.
4. Click the ENTER key to save your selection. An asterisk (*) appears in the display.
5. Click the ON LINE key to put the printer back on-line.
6. Continue with "Changing the MP SIZE Setting."

Changing the MP SIZE Setting

1. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
2. Remove *all* the letter paper from the Multi-Purpose tray. The display will show `MP LOAD LETTER`.
3. Fill the Multi-Purpose tray with legal paper.
4. Click the MENU key. The display shows `MP SIZE` in the first line of the display.
5. Click the +/- key until the display shows `MP SIZE LEGAL`.
6. Click the ENTER key. An asterisk (*) appears in the display.
7. Click the ON LINE key to put the printer back on-line.
8. The display will show `00 READY LEGAL`.
9. Continue with "Changing the JOB SIZE Setting."

Changing the JOB SIZE Setting

1. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
2. Click the MENU key until `JOB SIZE` appears in the first line of the display.
3. Use the +/- key until `JOB SIZE LEGAL` appears in the display.
4. Click the ENTER key to save your selection. An asterisk (*) appears next to your choice.
5. Click the ON LINE key to put the printer back on-line.
6. Continue with "Selecting the Output Tray."

Selecting the output tray

1. Decide which output tray you want to use. (Remember, use the top output tray for paper, and the front output tray for heavy paper stock, envelopes, transparencies, and labels.)
2. Depending on your selection, follow the directions earlier in this chapter to make the necessary adjustments.

   You are now ready to send your data from the computer.

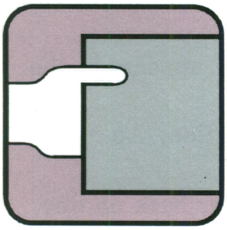
Note

When you are through with this example, use the control panel to return the printer to your previous settings.

Note

If you get a `10 RESET TO SAVE` message, refer to page 8-4.

Manual Feed Printing



The manual feed feature allows you to:

- Print an individual page on special paper such as a company letterhead sheet.
- Monitor your job as each page prints.
- Monitor non-standard sizes of paper, envelopes, labels, and transparencies as each one prints.

Use the Multi-Purpose tray to feed paper manually into your HP LaserJet IIIP printer.

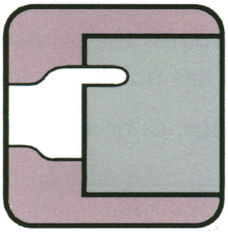
Attended Manual Feed

The HP LaserJet IIIP printer allows you to perform manual feed printing by selecting the Attended Manual Feed mode. You can select the Attended Manual Feed mode either by sending a manual feed printer command from your software or by using the control panel.

When the printer is in manual feed mode, all data sent to the printer is printed from the Multi-Purpose tray using manual feed. The printer displays the message `MF READY` to indicate that it is in manual feed mode.

When your software selects manual feed mode by sending a printer command, the `MF READY` message will only be displayed while a piece of paper is actually being printed using manual feed.

Example - Manually Feeding Paper



The procedure for manually feeding one or more sheets of paper is as follows:

1. Select manual feed mode by sending a printer command from your software application or by using the control panel. (The `MF READY` message appears if you select manual feed mode from the control panel.) To use the control panel, follow these steps:
    a. Click the **ON LINE** key to take the printer off-line. The green On-Line indicator should be off.

    b. Click the **MENU** key repeatedly until `MAN FEED` appears in the first line of the display.

    c. Click the **+/−** key to show `MAN FEED ON`.

    d. Click the **ENTER** key to save your selection. An asterisk (*) will appear in the display.

    e. Click the **ON LINE** key to put the printer back on-line. The display will show `MF READY`.
2. Send data from the computer to the printer. (The printer goes off-line and the Form Feed indicator lights up. The first line of the display will show `MF FEED` or `ME FEED` to indicate paper or envelopes, respectively.)
3. Place a single sheet into the Multi-Purpose tray. It may be placed on top of paper already in the tray as long as height limits are observed and it is the same size as paper in the Multi-Purpose tray. If paper already in the tray is of a different size, remove it and set the paper width adjuster for the paper to be fed manually. The printer will remain off-line.

4. Click the ON LINE key to print on the paper you inserted.

   If manual feed mode is still selected and your software has sent additional data to be printed, the printer goes back off-line after the first page has finished printing.

5. Repeat steps 3 and 4 for each page, as necessary.

6. When you are finished printing in manual feed mode, exit manual feed mode by using the same method you used to turn the manual feed mode on.

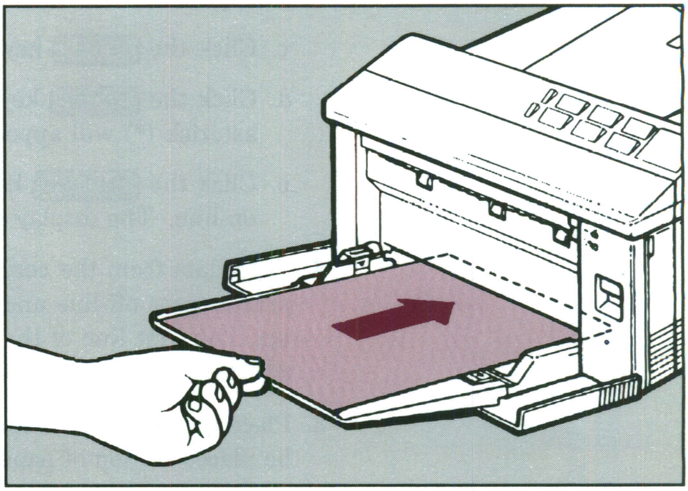
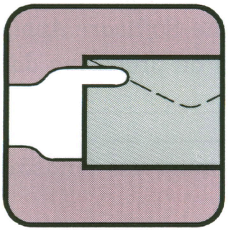


Figure 3-6. Attended Manual Feed

Example - Manually Feeding COMMERCIAL #10 Envelopes



The following example explains how to format an address and prepare the printer to print on a Commercial #10 envelope.

Formatting the Address to Fit on the Envelope

To format the address to fit on the envelope, do the following:

1. Type in the mailing address, and using your software, set a top margin of approximately 12 lines (2 inches) from the top of the page, and a left margin of approximately $4\frac{1}{2}$ inches.
2. Print your envelope.

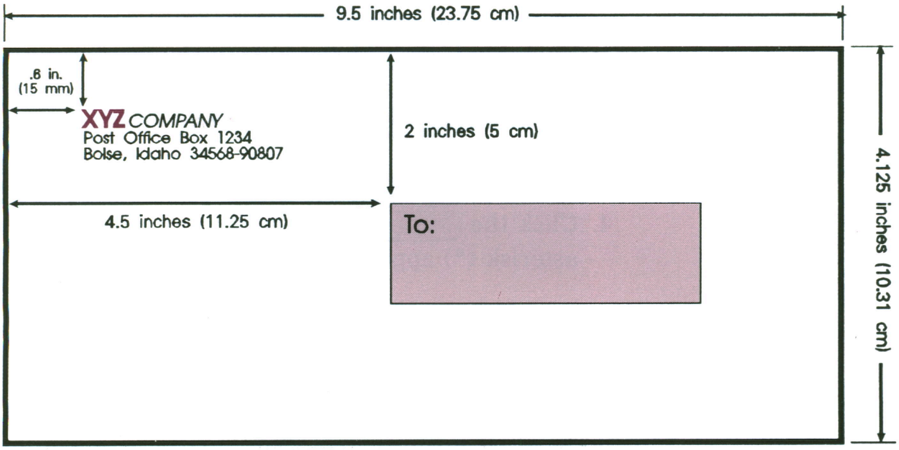

9.5 inches (23.75 cm)
.6 in.
(15 mm)
XYZ COMPANY
Post Office Box 1234
Boise, Idaho 34568-90807
2 inches (5 cm)
4.5 inches (11.25 cm)
To:
4.125 inches (10.31 cm)

Figure 3-7. Sample Envelope Layout

After you use your software to prepare data to be printed on envelopes, you can send the envelope data to your printer, preceeded by software commands to adjust the left margin to 3 or $3\frac{1}{2}$ inches, and the top margin to 12 lines (2 inches) from the top.

Refer to your software manual or the *Software Application Notes* manual for more information on preparing data for envelopes.

Note ☝ To format envelopes correctly, you must use landscape orientation.

Set the Control Panel

If your software does not send the proper printer commands to print an envelope, do the following:

1. Click the [ON LINE] key to take the printer off-line. The green On-Line indicator should be off.
2. Click the [MENU] key until `JOB SIZE` appears in the first line of the display.
3. Click the [+/—] key until `COM10` appears in the display.
4. Click the [ENTER] key to save your selection. An asterisk (*) appears in the display.

5. Click the MENU key until `ORIENT` appears in the first line of the display.
6. Click the +/- key to display `ORIENT L`.
7. Click the ENTER key to save your selection. An asterisk (*) appears in the display.
8. Click the MENU key until `MAN FEED` appears in the first line of the display.
9. Click the +/- key to display `MAN FEED ON`.
10. Click the ENTER key to save your selection. An asterisk (*) appears in the display.
11. Click the ON LINE key to exit the Printing Menu and put the printer back on-line.

Note

If your envelopes jam as they feed through the printer, the paper width adjuster may be too tight against the envelopes. Try backing off the paper width adjuster and leaving a *slight* gap between it and the envelope stack. In addition, make sure the envelope meets the requirements listed in appendix E.

Load an Envelope.

1. Install the Front output tray. (See step A under "Selecting the Output Tray" earlier in this chapter.)
2. Change the output tray selector to the down position.
3. Send data to the printer.
4. The printer goes off-line and displays `ME FEED COM10`.
5. Remove any other size paper already in the Multi-Purpose tray.
6. Flatten the leading edge of the envelope to reduce the possibility of jamming problems.

7. Insert your Commercial-10 envelope(s) into the Multi-Purpose tray.

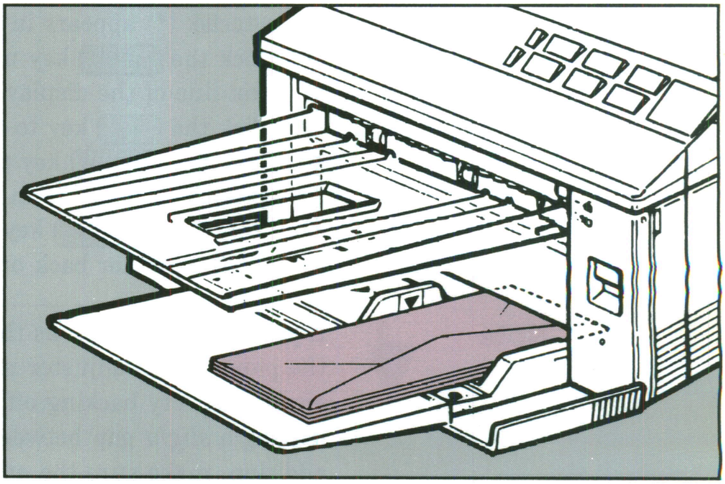


Figure 3-8. Inserting an Envelope into Manual Feed Tray

8. Adjust the paper width adjuster for the envelope size to reduce jamming problems.
9. Click the `ON LINE` key when you are ready to print.
10. To feed additional envelopes, wait for the `ME FEED COM10` message and insert another envelope as necessary.
11. Click the `ON LINE` key to print.

Note

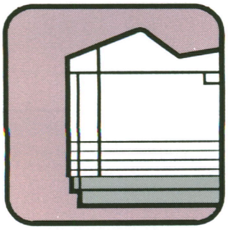
Set the Print density slide to a different setting if gray background appears. (You can experiment to see which setting works best for your envelopes. Refer to "Adjusting Print Density" on page 7-23 for more information.)

You should use the front output tray when printing envelopes to help prevent paper jams and for best print results.

4

Using the Optional Lower Cassette

Introduction



If your printer does not have an Optional Lower Cassette, you can skip this chapter.

This chapter describes how to use the Optional Lower Cassette base and tray accessory (HP part number 33472A (Letter) or 33472B (A4)). The Optional Lower Cassette accessory increases the paper-handling capacity of the HP LaserJet IIIP printer to up to 320 sheets and provides **dual-bin** capability (printing from both the Optional Lower Cassette tray and the Multi-Purpose tray).

This chapter includes information about:

- Configuring the control panel for the Optional Lower Cassette.
- Preparing the Optional Lower Cassette.
- Choosing the correct output tray.
- Using two kinds of paper in one job (dual bin printing).
- Printing envelopes from the Optional Lower Cassette.
- Using MP priority feed.

About the Optional Lower Cassette

The Optional Lower Cassette comes with a booklet called *Optional Lower Cassette Installation Guide*. Use this guide to set up your Optional Lower Cassette.

Once you have installed the Optional Lower Cassette, it becomes an integral part of the printer. The Optional Lower Cassette enhances the functionality of the HP LaserJet IIIP printer.

TRAYS - New Control Panel Menu Item

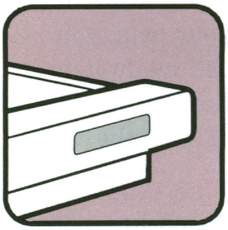
Installing the Optional Lower Cassette tray and base accessory adds a new menu item (`TRAYS`) and new display messages to the control panel. With the Optional Lower Cassette installed, the printer can also accept additional printer commands from your software to control selection of paper from the Multi-Purpose tray or the Optional Lower Cassette.

Table 4-1 lists the different ways you can use the Optional Lower Cassette. See page 4-11 for a description of MP priority feed.

Table 4-1. Control Panel TRAY Selections

Select	Primary Paper Source	Secondary Paper Source	Use in the following situation:
`LC ONLY` (factory default)	Optional Lower Cassette	MP priority feed	The Multi-Purpose tray is used for manual feed and MP priority feed only. You want to keep the Multi-Purpose tray door closed.
`LC TRAY`	Optional Lower Cassette	Multi-Purpose tray†	The Optional Lower Cassette has the main media. Papers used are the same size, but have different characteristics.
`MP TRAY`	Multi-Purpose tray	Optional Lower Cassette †	Multi-Purpose tray has the main media. Papers used are the same size, but have different characteristics.
`BOTH`	Optional Lower Cassette	Multi-Purpose tray	Both trays have the same kind and size of media, increasing capacity. Paper of two different sizes (printer selects requested size automatically).
† **Available using a software printer command only.**			

Using the Optional Lower Cassette



To set up the printer to use paper from your Optional Lower Cassette:

1. Select the paper input tray (`TRAYS`) and the data image size (`JOB SIZE`), either using your software or the control panel.
2. Load paper into the Optional Lower Cassette tray.
3. Select and prepare the output tray you want to use.

These steps are described in detail on the following pages.

Selecting the Control Panel Menu Items

To print using the Optional Lower Cassette, you must set both `TRAYS` and `JOB SIZE` Printing Menu items using the control panel. (Remember that job size can also be specified through your software.)

Four combinations of tray selections are available once the Optional Lower Cassette is installed. Use table 4-1 to decide what `TRAYS` setting you need.

Selecting TRAYS

To select the `TRAYS` menu item, follow these steps:

1. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
2. Click the MENU key until `TRAYS` appears in the first line of the display.
3. Click the +/- key until the choice you want appears.
4. Click the ENTER key to save your choice.
   An asterisk (*) will appear in the display.
5. Click the ON LINE key to put the printer back on-line.
6. Continue with the next section, "Selecting JOB SIZE."

Selecting JOB SIZE

As the printer receives data from the computer, it formats the data into a specific image size. To determine that image size, the printer checks for a printer command from your software. *If* your software does not send a printer command for the page size when it sends your data, you must make sure your control panel `JOB SIZE` menu item setting matches the size of the paper or other print media you have loaded in the tray. To set `JOB SIZE`, do the following:

1. Click the [ON LINE] key to take the printer off-line. The green On-Line indicator should be off.
2. Click the [MENU] key until `JOB SIZE` appears in the first line of the display.
3. Click the [+/-] key until the size paper or other print media you want to select appears.
4. Click the [ENTER] key to save your size. An asterisk (*) will appear.
5. Click the [ON LINE] key to put the printer back on-line.
6. Continue with the next section, "Preparing the Optional Lower Cassette."

The printer now formats to the size you selected *unless* your software sends a printer command to format the image to a different size.

Note

When you are printing from the Optional Lower Cassette only (you have set `TRAYS LC ONLY*` on the control panel), the Multi-Purpose tray size (`MP SIZE`) setting does not appear as a choice in the control panel menu item. This is because the printer can sense which one of the Optional Lower Cassette trays is installed, and does not need to be told through the control panel the physical size of the paper or other print media you have loaded into the Optional Lower Cassette.

Preparing the Optional Lower Cassette

Unlike the Multi-Purpose tray, which adjusts to a variety of paper sizes, the Optional Lower Cassette tray accomodates only one paper size. Additional trays are available, each tray supporting a particular size, such as Legal, A4, or Executive.

Follow the steps presented here to load paper into your Optional Lower Cassette tray. Be sure to follow the steps as presented to avoid the risk of paper jams.

Note

Place your paper with the printing side *face-up* in the Optional Lower Cassette tray. Many paper suppliers mark the print side of the paper on the ream wrapper (usually with an arrow pointing toward the print side). If necessary, you may want to consult with your paper supplier regarding the print side of your paper.

---

1. Remove the tray from the Optional Lower Cassette base.

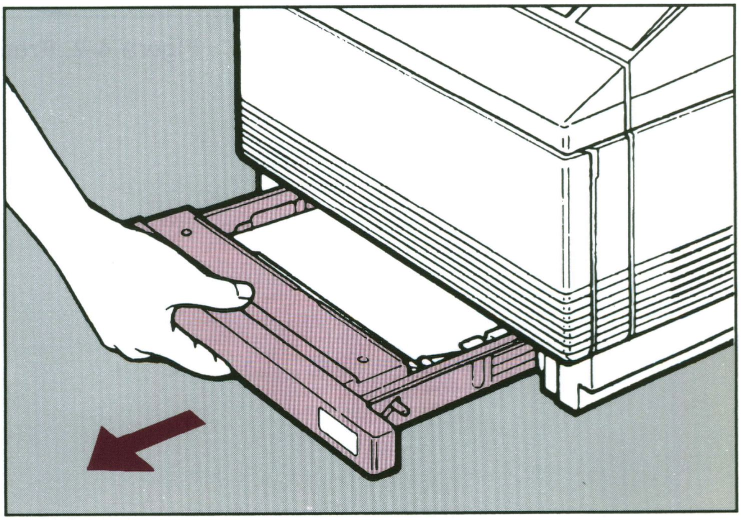


Figure 4-1. Removing the Tray

2. Select up to 250 sheets of paper to load. Then, while holding the stack loosely, tap the edge of the stack against a flat surface to align the edges.

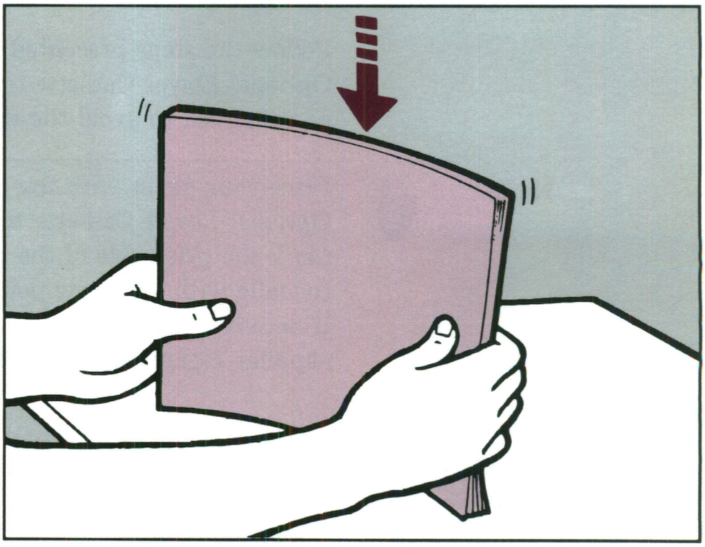


Figure 4-2. Preparing the Paper Stack

3. Slide the paper into the tray from the front side, making sure the paper lies underneath the tabs at the rear of the tray.

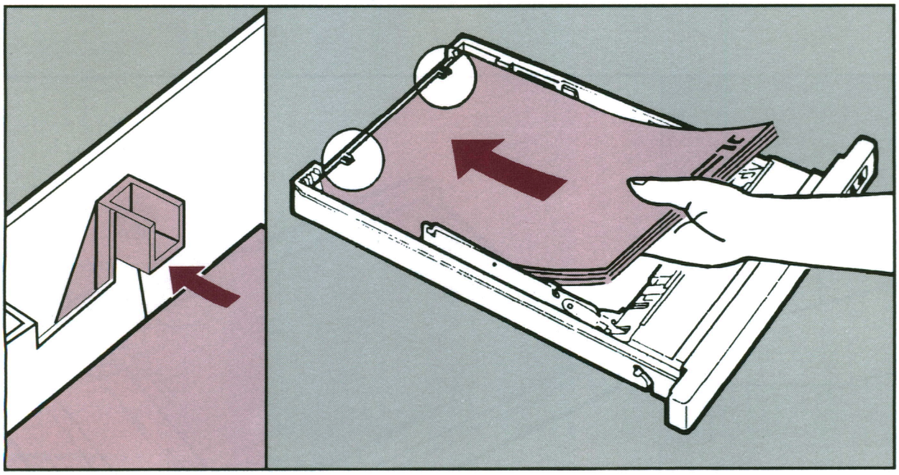


Figure 4-3. Putting Paper in the Tray

4. Press down on the front of the stack to place it under the metal retaining clips at the front of the tray, as shown by Ⓑ in figure 4-4. Make sure you have loaded paper only to the arrow limit mark on the tray, as shown by Ⓐ in figure 4-4.

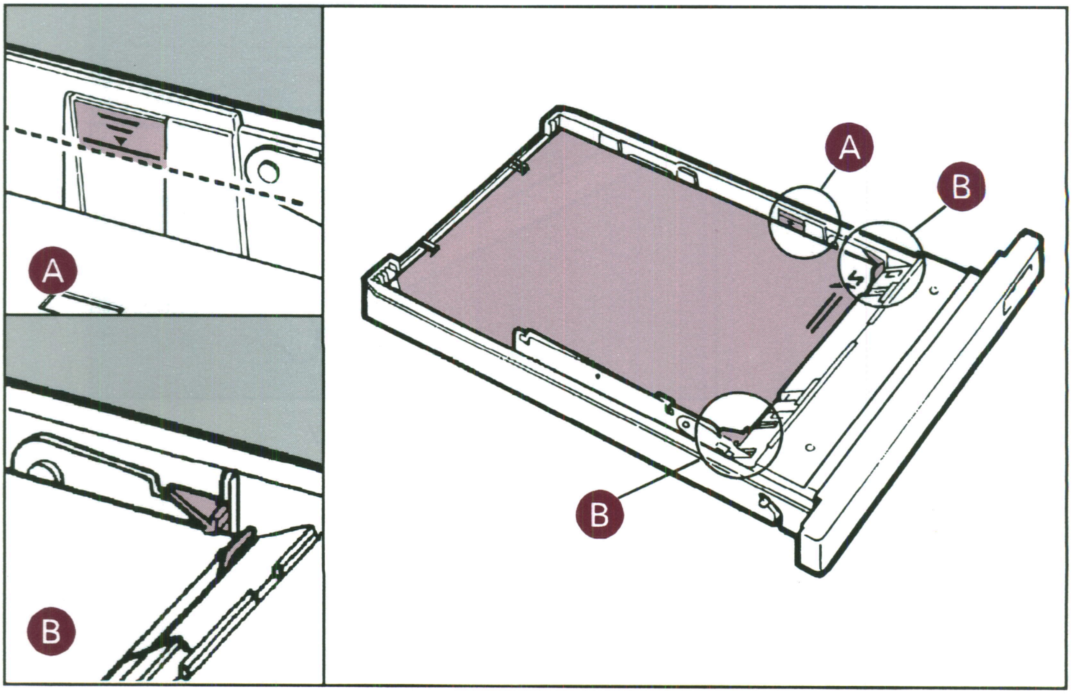


Figure 4-4. Placing Paper Under Metal Clips

5. Insert the tray into the Optional Lower Cassette base.
6. Continue with the next section, "Selecting the Output Tray."

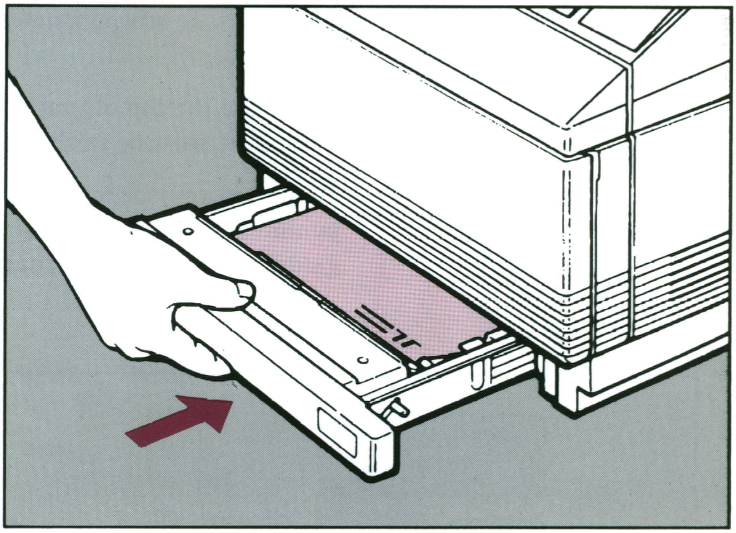


Figure 4-5. Inserting the Tray

Selecting the Output Tray

There are two output trays on your HP LaserJet IIIP printer as shown in figure 4-6. Choose the output tray that is best for your printing needs as described below. Then continue to the next section, "Printing."

A. **Front output tray** - the pages exit the printer from the front into the attached front output tray, and stack face-up. *Use this tray for heavy paper stock, envelopes, transparencies, and labels*. Using this tray will help to reduce paper curl. The Front output tray accommodates approximately 20 sheets of paper, 5 envelopes or 10 sheets of label stock.

   To use the front output tray, the Output tray selector button must be in the down position. Refer to the

HP LaserJet IIIP Printer Getting Started Guide for installation instructions.

B. **Top output tray** - the pages exit the printer from the top into the Top output tray, and stack face-down. *Use this tray for printing on "standard" paper (16 to 28 pound). It accommodates approximately 70 sheets of paper.*

To use the top output tray, the Output tray selector button must be in the up position.

To ensure your paper moves through the printer without jamming or double feeding, the paper should meet the guidelines outlined in appendix E.

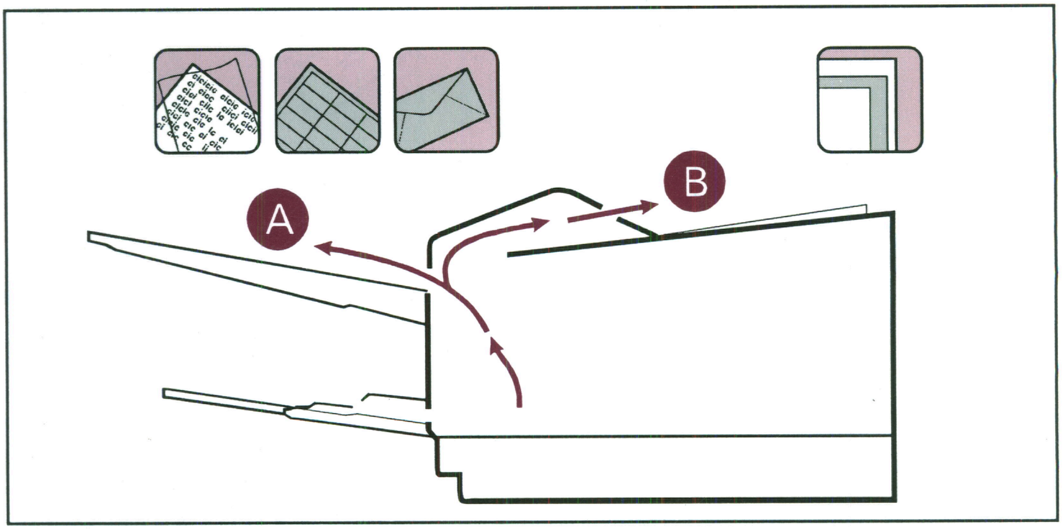


Figure 4-6. The Printer's Output Trays

Printing Now that you have set up your Optional Lower Cassette for printing, loaded the correct paper, and selected your output tray, it's time to print your document.

MP Priority Feed

The HP LaserJet IIIP printer allows you to override the Optional Lower Cassette to feed a single sheet of paper or print media (such as letterhead paper or an overhead transparancy) without having to set the manual feed menu item using either your software or printer control panel. This feature is called **MP priority feed**.

Use this feature if you want to print on the same size paper or other print media that is currently loaded in your Optional Lower Cassette tray. For example, suppose you were printing on letter sized paper from your Optional Lower Cassette and you wanted to print the first page of your document on letterhead paper. Rather than load the letterhead paper into the Optional Lower Cassette, you can place the sheet of letterhead paper in the Multi-Purpose tray. The printer will automatically pull the first sheet of paper from the Multi-Purpose tray, and then continue pulling paper from the Optional Lower Cassette.

Using MP Priority Feed

To use MP priority feed:

1. Make sure the `TRAYS` menu item is set to `LC ONLY`.
2. Load the paper or other print media into the correct-sized Optional Lower Cassette tray. Place the side to be printed face up, with the top of the page at the front of the tray.
3. Make sure job size matches the size of paper you loaded into the Optional Lower Cassette tray. You can set job size either through your software application (refer to your software application documentation for more information), or through the control panel, as follows:
   a. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
   b. Click the MENU key repeatedly until `JOB SIZE` appears in the first line of the display.

   c. Click the +/- key to select the paper or print media size that matches the size of the Optional Lower Cassette tray.

   d. Click the ENTER key to save your selection. An asterisk (*) appears in the display.

   e. Click the ON LINE key to return the printer on-line.

4. Place one or more sheets of paper or other print media (such as letterhead paper) in the Multi-Purpose tray. Remember to load the paper or other print media side to be printed face-down, with the top of the page towards the printer.

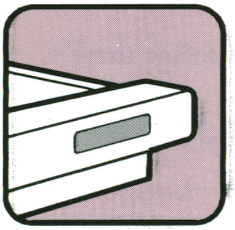
5. Send your print job to the printer.

   The printer will pull the paper (or other print media) from the Multi-Purpose tray instead of the Optional Lower Cassette tray until the Multi-Purpose tray is empty. The printer will then resume pulling paper from the Optional Lower Cassette tray.

Note

If `LC LOAD` appears in the first line of the display followed by the paper size (such as `LEGAL` or `LETTER`), either the Optional Lower Cassette tray is empty, or the `JOB SIZE` setting does not match the Optional Lower Cassette tray size. Make sure the Optional Lower Cassette tray has paper in it and that Optional Lower Cassette paper tray size matches the `JOB SIZE` setting (sent by your software or set at the control panel).

Using Different Input Trays



Five trays are available for your Optional Lower Cassette. Your Optional Lower Cassette comes with a letter tray or an A4 tray depending upon the model you have purchased. You can also purchase any of the following trays to use with your Optional Lower Cassette.

- Letter.
- Legal.
- A4.
- Executive.
- Envelope.

Example - Using the Legal Tray

To print from the legal tray, two main steps are involved:

1. Setting up the control panel for legal-sized paper (necessary only if your software application does not support legal-sized paper.)
2. Setting up the physical printer to accommodate the legal tray.

Setting Up the Control Panel

Use the control panel to select `JOB SIZE` as follows:

1. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
2. Click the MENU key until `JOB SIZE` appears in the first line of the display.
3. Click the +/- key until `JOB SIZE LEGAL` appears.
4. Click the ENTER key to save your size. An asterisk (*) appears in the display.
5. Click the ON LINE key to put the printer back on-line.
6. Continue with the next section, "Setting Up the Printer."

Setting Up the Printer

The legal tray includes a rear cover to keep out foreign material that cause problems. It also helps prevent the tray from becoming dislodged.

To install the rear cover for the legal tray, follow these steps:

1. Remove the paper tray from the Optional Lower Cassette base.
2. Remove the flap from the back of the Optional Lower Cassette base. Grasp the flap in the middle. Flex to bow the flap slightly in order to pull it out of the holes.

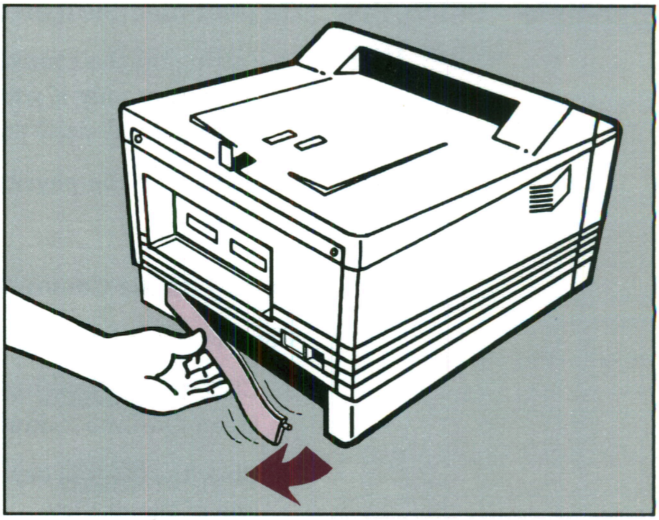


Figure 4-7. Removing the Flap

3. Insert the rear cover into the same holes from which the back flap was removed. You may leave this cover permanently installed. It is compatible with other trays.

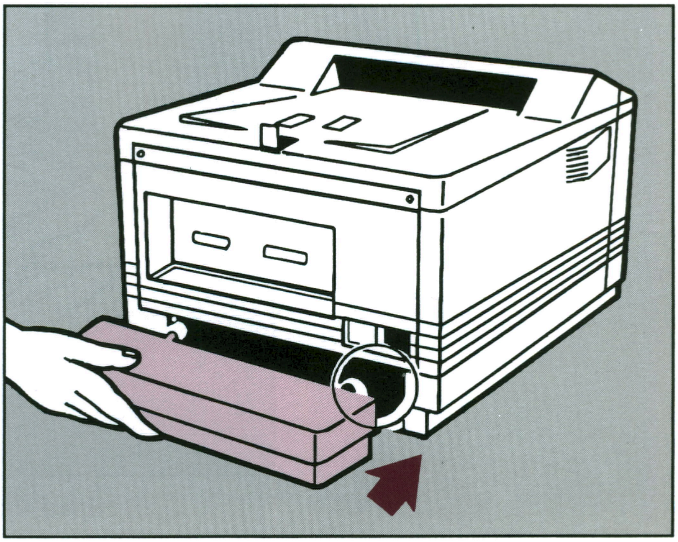


Figure 4-8. Inserting Legal Tray Rear Cover

4. Load legal paper into the tray following the directions for loading paper given earlier in this chapter.

5. Insert the legal tray into the front of the Optional Lower Cassette base.

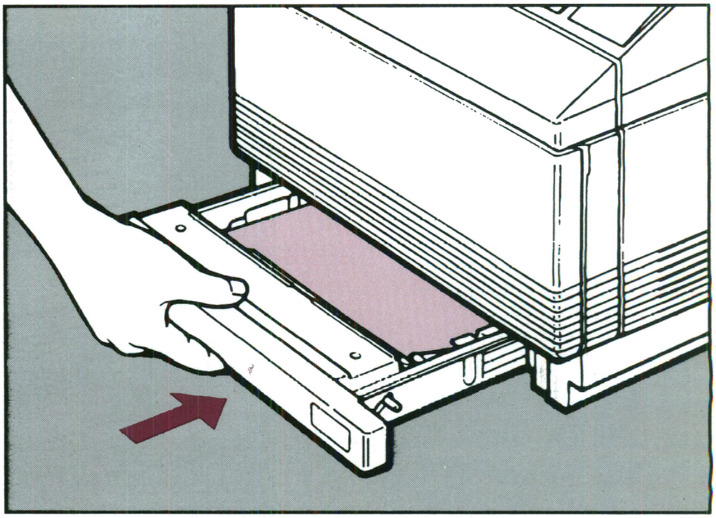


Figure 4-9. Inserting Legal Tray

6. Snap the Legal paper stop on the Top output tray into place.
7. Print your document.

Example - Using the Envelope Tray

Purchase envelopes that are constructed with well-creased edges for use in a laser printer to ensure good performance of your printer's envelope tray. Use envelopes that meet material requirements described under "Envelopes" in appendix E.

Note

Before loading envelopes, make sure the envelope construction is of good quality. DO NOT use envelopes that are damaged or "dog-eared." Loading envelopes which do not meet the specifications listed in appendix E may cause paper jams.

Using the envelope tray involves the following procedures.

1. Loading envelopes into the envelope tray.
2. Installing the envelope tray.
3. Responding to the control panel display prompt for envelope size.
4. Selecting the front output path.
5. Printing the envelope.

Loading Envelopes into the Tray

To load envelopes, follow these steps.

1. After inspecting the envelope quality, select up to 20 envelopes, and tap against a flat surface to straighten the stack.
2. Place the envelope stack address side up (flap side down) into the tray, with the top of the envelope towards the outside edge of the tray. Ensure the envelope stack is squarely and uniformly placed under the metal retaining clips in the envelope tray. The uncompressed height of the envelopes must be no higher than the arrow on the side of the tray.

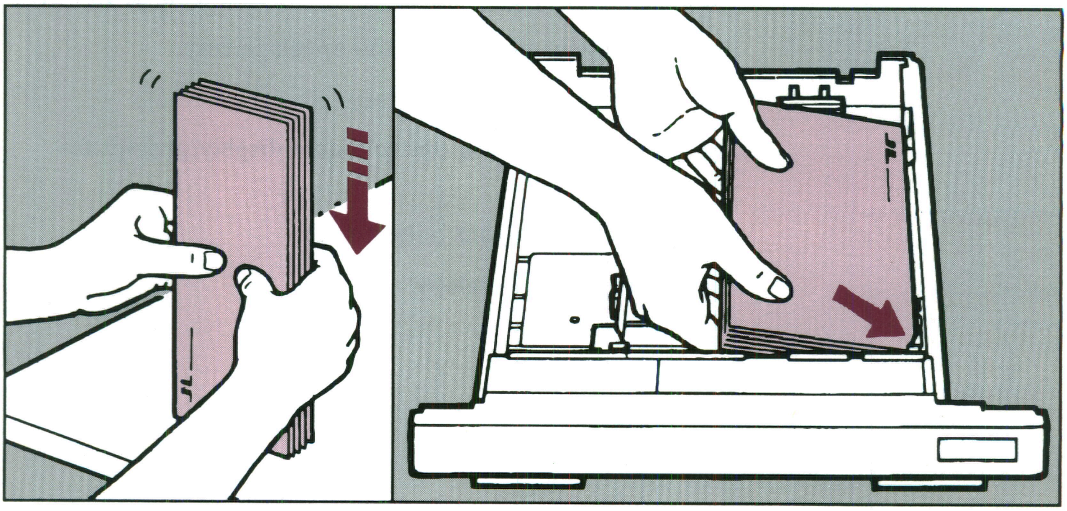


Figure 4-10. Placing the Envelope Stack in the Tray

3. Adjust the width guide ① and length guide ② to match the envelope size.

Note

If you experience envelope jamming problems, try pulling back the width guide slightly and leaving a small gap between the guide and the paper. Refer to chapter 8 for more information on jamming problems.

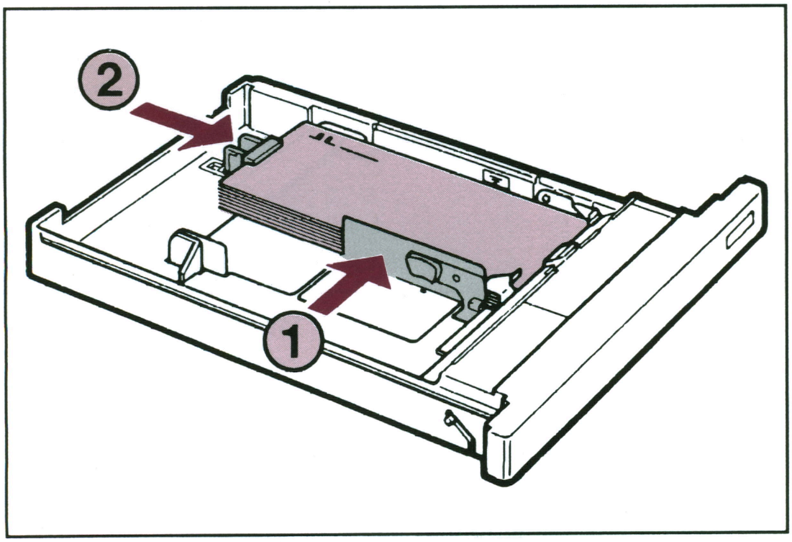


Figure 4-11. Adjusting the Width and Length Guides

Installing the Envelope Tray

Remove the previous paper tray from the base of the Optional Lower Cassette, and insert the envelope tray.

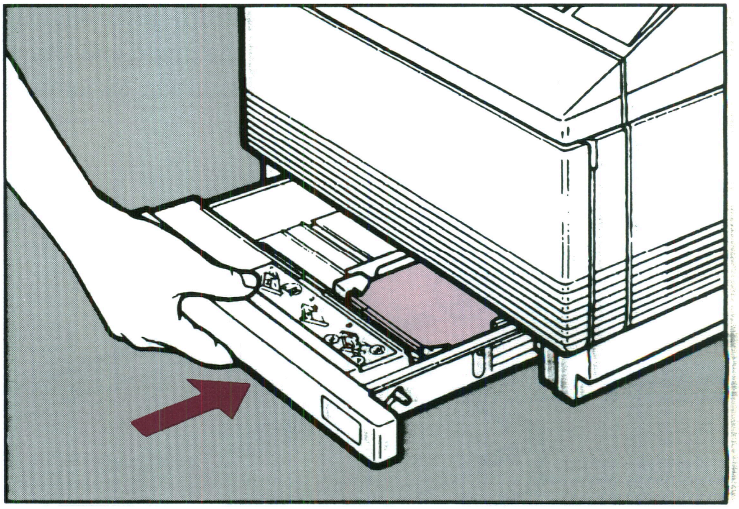


Figure 4-12. Installing the Envelope Tray

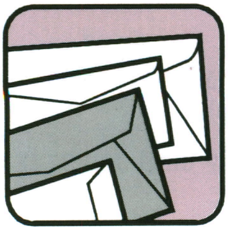
Responding to the Control Panel Display

Once you install the envelope tray, `LE TRAY` appears in the first line of the display for 10 seconds and the printer goes off-line. This is because the envelope tray has no sensors to tell the printer what size envelopes you have installed in the envelope tray.

If the size displayed is the desired size, click the **ON LINE** key, and the printer is ready to print an envelope. The first line of the display should show `00 READY`.

Note

If you do not click the ON LINE key within 10 seconds of inserting the envelope tray, the printer assumes the envelope size displayed matches the envelope size loaded, and `00 READY` appears in the first line of the display. If you wanted to select a different size but you did not press the keys before the 10 seconds elapsed, remove and re-insert the tray. The printer gives you another 10 seconds to make your selection.



To change from the envelope size displayed, follow these steps, starting while the `LE TRAY` message appears on the first line of the display:

1. Click the +/- key to step through the envelope sizes until the displayed size matches the size in the tray. The message will display one of the envelope sizes listed in table 4-2.

Table 4-2. Envelope Choices and Size

Displayed	Size
`COM10`	$4\frac{1}{8}$ x $9\frac{1}{2}$ inches
`MONARCH`	$3\frac{7}{8}$ x $7\frac{1}{2}$ inches
`DL`	110 x 220 mm
`C5`	162 x 229 mm

   If you are not using one of the envelope sizes listed above, choose the next largest envelope size.

2. Click the ENTER key to make your selection. An asterisk (*) appears in the display.
3. Click the ON LINE key to put the printer back on-line. The first line of the display should show `00 READY`.

Selecting the Envelope Tray from the Control Panel

If your software application does not allow you to select the job size and orientation, then you can use the control panel to make the selections to print an envelope, as follows:

1. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
2. Click the MENU key until `TRAYS` appears in the first line of the display.
3. Click the +/- key to choose `LC ONLY`, `LC TRAY`, or `BOTH`. You must set the `TRAYS` menu item to one of these selections.
4. Click the ENTER key to make your selection. An asterisk (*) appears in the display.
5. Click the MENU key repeatedly until `JOB SIZE` appears in the first line of the display.
6. Click the +/- key until the envelope size you desire appears. The job size you select must match the physical size you have loaded and selected at the control panel. If you are using an odd-sized envelope, you must choose the next largest envelope size.
7. Click the ENTER key to make your selection. An asterisk (*) appears in the display.
8. Click the MENU key again until `ORIENT` appears in the first line of the display.
9. Click the +/- key until `ORIENT L` appears.
10. Click the ENTER key to save your selection. An asterisk (*) appears in the display.
11. Click the ON LINE key to put the printer back on-line.

Selecting the Front Output Tray

1. To select the Front output tray, open the Multi-Purpose tray door and set the Output tray selector button to the down setting (see figure 3-1, item #4).
2. Attach the Front output tray to the front of the printer. (See figure 4-6 on page 4-10). Refer to the *HP LaserJet IIIP Printer Getting Started Guide* for more information on installing the Front output tray.

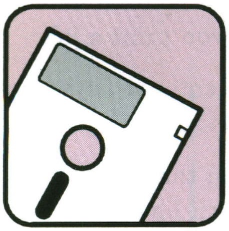
Printing the Envelope

You are now ready to sent the data from the computer to the printer. For information on formatting the envelope, refer to "Formatting the Address to Fit on the Envelope" on page 3-19 or the *Software Application Notes*.

5

Using the Printer with Your Software

Introduction



The easiest way to control your printer is by using a software application, such as a word processor, spreadsheet, database report generator, or graphics package. *Remember, software commands override corresponding control panel Print Menu selections.*

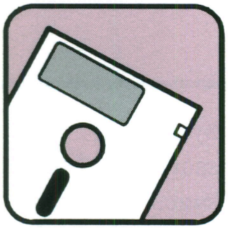
If you use your software to set up your print job, you do not have to change the settings on the control panel each time you send a different kind of job to the printer.

Refer to the *Software Application Notes* for additional information on using your HP LaserJet IIIP printer with some of the most popular software packages. The inside front cover of this manual contains information for requesting application notes for additional software. Another source of information is the documentation that comes with your software package. Many software companies also offer a phone line for technical assistance.

In this chapter, you will learn how to:

- Control your printer through software printer drivers.
- Use set-up strings in your software.
- Embed printer commands in your software.
- Use PCL printer commands.
- Use the HP-GL/2 graphics command mode.

How Software Works With the Printer



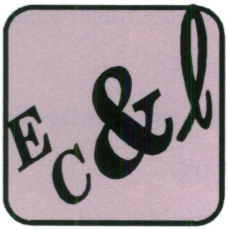
Typically, you print using a software package, such as a desktop publishing or word processing system, spreadsheet, or graphics package.

Software applications send information that selects and controls printing features in three different ways:

- **Drivers** are special files within software applications that control the operation of the printer.
- **Setup strings** or initialization strings are entered in software and sent to the printer before you print a job.
- **Embedded printer commands** can be entered anywhere in your document.

Because most printing problems stem from the way your software and the printer interact, learn how your software works with the printer. If you have trouble and suspect that it may be software related, please contact your software supplier for information on using your package with the printer.

What are Printer Commands?



Printer commands tell the printer which tasks to perform or fonts to use. Once you know how your software works with the printer, you may be able to enter printer commands indirectly (by making software selections), or directly (by using set-up strings or by entering the command within the text of your file). Printer commands are sometimes called **escape sequences** because they begin with the ASCII escape (^E_C) character. Printer commands usually override any selections you have made on the printer's control panel.

Remember that many software packages do not require you to enter printer commands. Before going on, look in the printing section of your software manual to see how your software works with the printer.

Software That Uses Drivers

Drivers are programs that allow your software package to send page set-up commands and print data to the printer. They work automatically so that you do not have to enter individual printer commands yourself. For example, drivers allow you to change fonts and select paper trays. Some software packages let you make these selections through menus, while others use function keys.

Some common software packages that use drivers to communicate with the printer are:

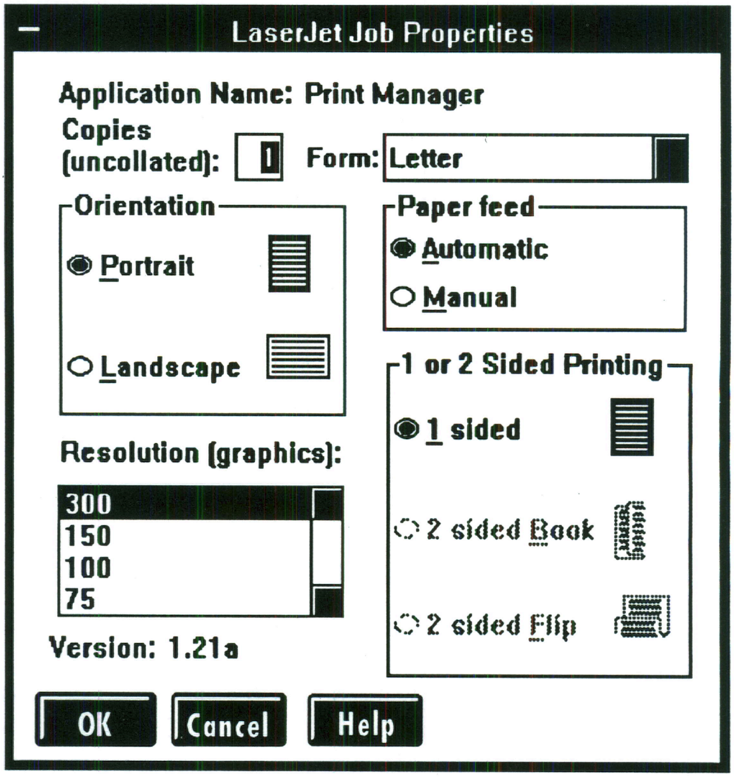
- WordPerfect.
- Microsoft Word.
- Windows applications.
- WordStar.
- MultiMate.
- Ventura Publisher.

Driver Availability

If an HP LaserJet IIIP printer driver is not available, select the driver definition that is closest to the printer's features that you want to use. A LaserJet III or LaserJet IIID driver will provide scalable font and PCL 5 features, but only the LaserJet IIID driver will support all the paper handling features of the HP LaserJet IIIP printer. A LaserJet IIP driver will give you all the paper handling features of the HP LaserJet IIIP printer, but will not address the scalable typefaces resident in the printer.

If a LaserJet IIP, III, or IIID driver is not available, any LaserJet driver will provide minimal feature support. Call your software manufacturer for information about full HP LaserJet IIIP printer support.

Figure 5-1 shows a sample menu that uses a driver to send printer commands to the printer.



LaserJet Job Properties

Application Name: Print Manager

Copies (uncollated): 1

Form: Letter

Orientation
● Portrait
○ Landscape

Paper feed
● Automatic
○ Manual

1 or 2 Sided Printing
● 1 sided
○ 2 sided Book
○ 2 sided Flip

Resolution (graphics):
300
150
100
75

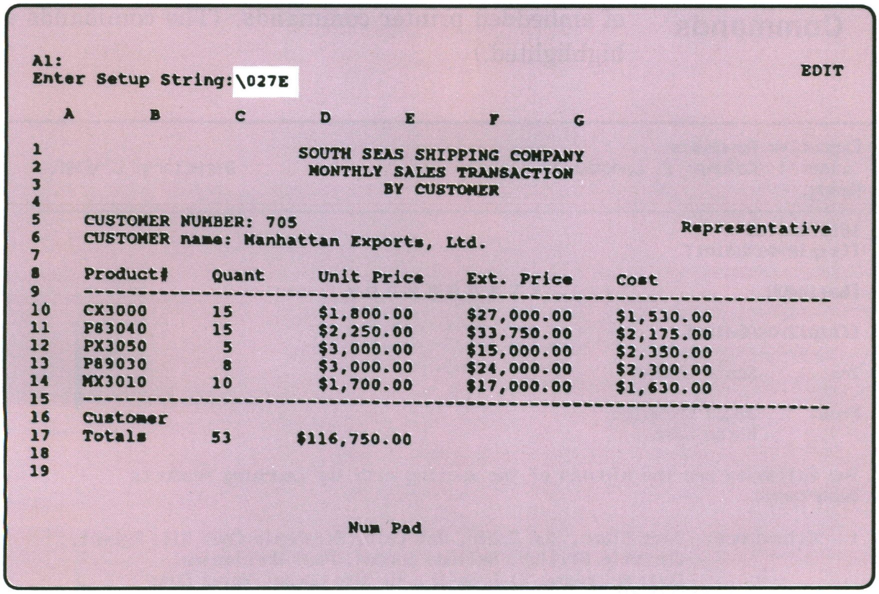
Version: 1.21a

Figure 5-1.
Some Selectable Printing Options
Using Software Drivers

Software That Uses Set-Up Strings

Some software packages allow you to enter printer commands in initialization or set-up strings. You combine and enter the printer commands in a menu or screen. The set-up string goes to the printer first, before any other data. Some software packages that use set-up strings also allow you to embed printer commands in your file. Refer to "Software That Uses Embedded Printer Commands" on page 5-6.

A screen where you enter a set-up string may look like this:



```
A1:
Enter Setup String:\027E                                               EDIT

    A        B        C        D        E        F        G

1                                SOUTH SEAS SHIPPING COMPANY
2                                 MONTHLY SALES TRANSACTION
3                                        BY CUSTOMER
4
5      CUSTOMER NUMBER: 705                                     Representative
6      CUSTOMER name: Manhattan Exports, Ltd.
7
8      Product#     Quant      Unit Price      Ext. Price      Cost
9      -----------------------------------------------------------------------
10     CX3000        15        $1,800.00      $27,000.00      $1,530.00
11     P83040        15        $2,250.00      $33,750.00      $2,175.00
12     PX3050         5        $3,000.00      $15,000.00      $2,350.00
13     P89030         8        $3,000.00      $24,000.00      $2,300.00
14     MX3010        10        $1,700.00      $17,000.00      $1,630.00
15     -----------------------------------------------------------------------
16     Customer
17     Totals        53      $116,750.00
18
19

                                 Num Pad
```

Figure 5-2. Set-Up String Example

Software usually limits the length of set-up strings. Refer to *"Combining PCL Printer Commands"* later in this chapter for ways to shorten the length of your set-up string.

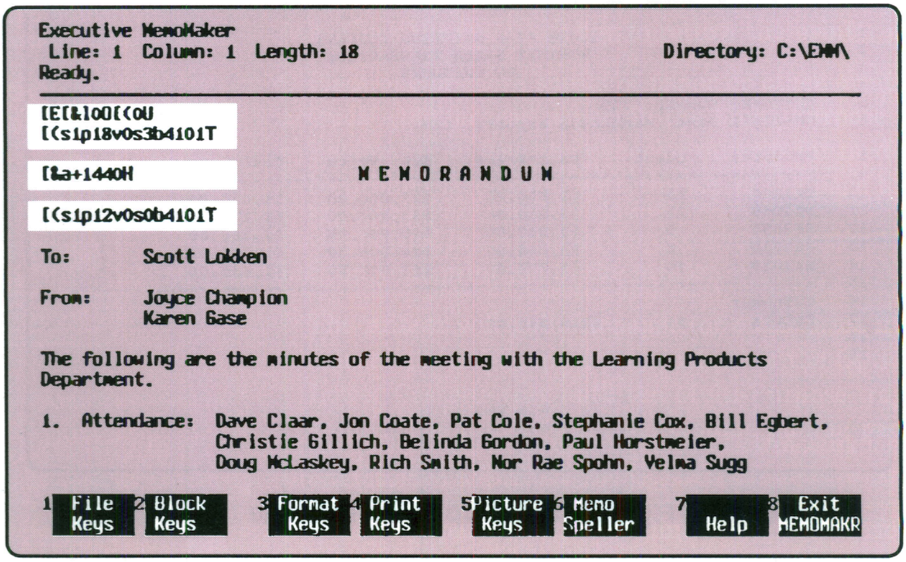
Software packages that use set-up strings to communicate with the printer include:

- Lotus 1-2-3.
- Quattro.
- Symphony.

For information on using set-up strings with an application such as Lotus 1-2-3, refer to the *Software Application Notes* included with your printer.

Software That Uses Embedded Printer Commands

Some software packages let you enter printer commands anywhere in your file. Figure 5-3 shows an example of embedded printer commands. (The commands are highlighted.)



```
Executive MemoMaker
 Line: 1  Column: 1  Length: 18                           Directory: C:\EMM\
Ready.
________________________________________________________________________________
[E[&l0O[(0U
[(s1p18v0s3b4101T

[&a+1440H                          M E M O R A N D U M

[(s1p12v0s0b4101T

To:        Scott Lokken

From:      Joyce Champion
           Karen Gase

The following are the minutes of the meeting with the Learning Products
Department.

1.  Attendance:  Dave Claar, Jon Coate, Pat Cole, Stephanie Cox, Bill Egbert,
                 Christie Gillich, Belinda Gordon, Paul Horstmeier,
                 Doug McLaskey, Rich Smith, Mor Rae Spohn, Velma Sugg
```

1 File Keys
2 Block Keys
3 Format Keys
4 Print Keys
5 Picture Keys
6 Memo Speller
7 Help
8 Exit MEMOMAKR

Figure 5-3. Embedded Printer Commands

Some common software packages that use embedded printer commands to communicate with the printer are:

- Lotus 1-2-3.
- Quattro.

Intellifont for Windows 3.0

Hewlett-Packard's *Intellifont-for-Windows 3.0* driver works with most Windows 3.0 applications, and adds the following capabilities to your Windows 3.0 environment:

- Enhanced HP Font Installer for adding scalable typefaces and bitmapped fonts. You can access the font installer through the *Intellifont-for-Windows 3.0* icon, or through the Printer Setup function in any Windows 3.0 application.
- High resolution screen fonts to match the scalable typefaces resident in the HP LaserJet IIIP printer.

See the inside front cover of this manual for ordering information.

AutoFont Support

Hewlett-Packard provides font width information for your software through **AutoFont Support**. Your software uses font width information to determine how many characters will fit on a line in any given point size.

If your software application offers AutoFont Support, you will have instant access to any of Hewlett-Packard's internal or optional bitmapped font and scalable typeface products.

Included with the most recent HP bitmapped font and scalable typeface products are several diskettes containing **AutoFont Support** files. These files have the extension `.TFM`. Installation instructions are included with the diskettes.

Type Director

The Type Director font management program will let you install and scale typefaces for several earlier versions of popular software packages.

The following questions help you to determine if you need the Type Director 2.0 program.

1. Does your software application use AutoFont Support (or .TFM files)? See your software manual or the *Software Application Notes*.

   - IF **YES**, you do not need Type Director.

   - IF **NO**, go on to the next question.

2. Do you plan to use accessory scalable type from HP's MasterType Library, or do you want to make matching screen fonts (to match printer fonts) for a graphical application like MS Windows or Ventura Publisher?

   - IF **NO**, you do not need Type Director.

   - IF **YES**, go on to next question.

3. Are you using Windows version 3.0 or later?

   - IF **YES**, you do not need Type Director. You need HP's *Intellifont-for-Windows 3.0* driver. See the inside front cover of this manual for information on how to order this driver.

   - IF **NO**, go on to the next question.

4. Are you using MS Word version 4.0 or later, MS Windows version 2.0 or later, Ventura Publisher 2.0 or later, or WordPerfect version 5.0 or later?

   - IF **YES**, you need Type Director.

   - IF **NO**, you do not need Type Director. Check with your software application vendor for available accessory type support.

See the inside front cover of this manual for information on ordering Type Director through your local authorized HP Dealer.

Software Utilities

A few software packages, do not let you send printer commands directly. In such cases, you can often use a software utility designed specifically to control printer output.

Some software utility packages for controlling printer output are:

- LaserControl.
- Printworks for Lasers.
- RAM Resident Printmerge.

The PCL 5 Printer Language Modes

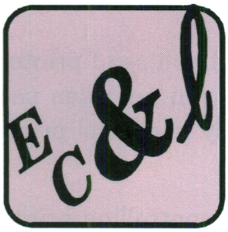
The HP LaserJet IIIP printer accepts commands in the PCL 5 printer language, which has two modes:

- PCL printer language mode.
- HP-GL/2 graphics mode.

PCL printer language mode is used for standard printer operations, such as selecting fonts, defining a page, and printing data. HP-GL/2 graphics mode is primarily used for vector graphics (typically output on a pen plotter).

Printing with HP-GL/2 requires leaving the PCL printer language mode and entering HP-GL/2 graphics mode. Switching between modes involves only a few commands. Both PCL printer language commands and HP-GL/2 commands can be used on the same page.

PCL Printer Language Mode



PCL printer commands always begin with the escape character ($^{E}_{C}$). The escape character precedes a unique series of letters and numbers that tell the printer what to do (see figure 5-4). Software packages have different ways of inserting or representing $^{E}_{C}$, most commonly by its numeric character value: 27 in decimal or 1B in hexadecimal.

Most PCL printer commands have a value field for which you must supply a number. This number can be a literal value, such as 12.00 for point size, or a representative value, such as 1 for Multi-Purpose tray. In figure 5-4, a # symbol within a PCL printer command means you should enter a number for the quantity or value you want in place of the # symbol.

All PCL printer commands end with an uppercase letter or a special symbol (such as =).

Note

PCL printer commands are *case sensitive.* Make sure you enter uppercase and lowercase letters correctly.

Figure 5-4 displays the elements of a page orientation PCL printer command.

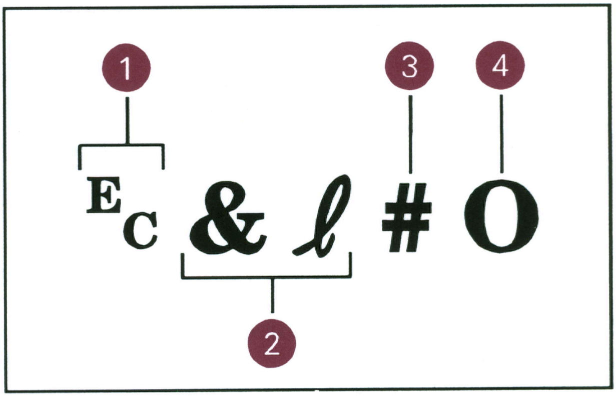


Figure 5-4. PCL Printer Command Explanation

1. Escape character – begins command.
2. Notifies printer of the type of command.
3. Value field designator.
4. Uppercase letter terminates a command.

Note

Before using printer commands, distinguish between these characters:

Lowercase l:	ℓ	Uppercase O:	O
Number one:	1	Number zero:	0

Many printer commands use the lowercase letter l (ℓ) and the number one (1), or the uppercase letter O (O) and the number zero (0). These characters may not appear on your screen as shown here.

Commonly Used PCL Printer Commands

The table below lists some of the commonly used PCL language printer commands. Appendix A provides a complete list of printer commands.

Table 5-1. Sample PCL Printer Commands

Printer Command	Function	# (Value Field) Refers To:
$^{E}_{C}$E	Resets the printer	n/a
$^{E}_{C}$&ℓ#X	Indicates number of copies	1 to 99
$^{E}_{C}$&ℓ#H	Sets paper source	0 = print the current page 1 = Multi-Purpose tray 2 = manual feed - paper 3 = manual feed - envelope 4 = optional lower cassette
$^{E}_{C}$&ℓ#A	Sets job size	1 = executive 2 = letter 3 = legal 26 = A4 80 = Monarch 81 = Commercial 10 90 = DL 91 = C5

Table 5-1. Sample PCL Printer Commands (continued)

Printer Command	Function	# (Value Field) Refers To:
$^{E}_{C}$&ℓ#O	Sets orientation	0 = portrait 1 = landscape 2 = reverse portrait 3 = reverse landscape
$^{E}_{C}$&a#L	Sets left margin	column number
$^{E}_{C}$&a#M	Sets right margin	column number
$^{E}_{C}$&ℓ#E	Sets top margin	number of lines
$^{E}_{C}$&ℓ#D	Sets line spacing	lines per inch: (1,2,3,4,6,8,12,16,24, or 48)
$^{E}_{C}$&k#H	Sets horizontal motion index	$\frac{1}{120}$th inch increments
$^{E}_{C}$&ℓ#C	Sets vertical motion index	$\frac{1}{48}$th inch increments
$^{E}_{C}$(s#V	Sets point size (height)	$\frac{1}{72}$nd inch increments
$^{E}_{C}$%#A	Enter PCL mode	0 = Previous PCL position 1 = Current HP-GL/2 pen position
$^{E}_{C}$%#B	Enter HP-GL/2 graphics mode	0 = Previous HP-GL/2 pen position 1 = Current PCL cursor position

For a complete description of both the PCL and HP-GL/2 commands, consult the *PCL 5 Printer Technical Reference Manual.*

How to Use PCL Printer Commands

If your software does not automatically send printer commands, you may be able to enter them directly into your job file, or in a menu provided by your software. Refer to your computer and software manuals to find the best method to enter printer commands. The *Software Application Notes* manual may also be helpful; it explains how to use printer commands with many popular software packages.

The escape character ␛ is often represented by:

- 1B (Hexadecimal).
- 27 (Decimal).

Usually, the ␛ character does not appear on your screen. Instead, a different character appears, depending on the software you are using. How you insert the escape character ␛ and what it looks like on your screen depends on your software package. Here are some examples:

Table 5-2.
Software Escape Character Commands

Software Package	Entry	What Appears
Lotus 1-2-3 and Symphony	Type \027	\027
Microsoft Word	Hold down ALT key and type 027 on the numeric keypad	←
Executive MemoMaker	Type the Esc key	[(highlighted)

The printer commands seen on the screen are not printed and do not take up space on the printed copy. They may take up space on the screen.

In printer commands, the escape character precedes additional characters (ASCII characters) or hexadecimal representations of these characters. For example, the landscape orientation command can be entered using these ASCII characters in Lotus 1-2-3:

\027&ℓ1O

In some software applications, you can enter the same command using these hexadecimal codes:

1B 26 6C 31 4F

(Appendix A lists the hexadecimal codes for printer commands.) Once you know which method to use to enter commands (if required by your software), read the next section to learn how to shorten them. Combining commands is especially helpful if you are using set-up strings or have a limited amount of space in which to enter the commands.

Note

A printer command that the printer receives stays in effect until changed by a subsequent command. A printer reset will reset the printer back to its Printing Menu selections.

For example, if you send the printer a command to change the left margin, each page will print with that margin setting until you send a new margin command or reset the printer.

To reset the printer, take the printer off-line. Hold down the [Alt] key and click [Reset]. 07 RESET will appear in the display. Another method is to send the reset printer command (${}^{E}_{C}$E) from your computer.

Combining PCL Printer Commands

Some printer commands can be combined before sending them to the printer. With some software packages, you may need to shorten a string of commands because of limited string length.

These two printer commands set the job size to legal and the orientation to landscape:

␛&ℓ3A and **␛&ℓ1O**

They can be combined and sent to the printer like this:

␛&ℓ3a1O

Notice that the ␛, the &, and the ℓ are dropped from the second printer command when they are combined. Also, the upper-case "A" that ended the first command becomes a lower-case "a" when these commands are combined.

Use these three rules to combine and shorten PCL printer commands:

- The first two characters after ␛ must be the same in all printer commands you want to combine. In the example above, these characters are & and ℓ.
- All alphabetic characters within the combined printer commands must be lowercase, except the final letter. In the combined example above, "A" becomes "a." The final character in the printer command must always be uppercase to tell the printer the command sequence is complete.
- Printer commands take effect as your printer encounters them. Be sure to combine printer commands in the order that the printer should perform them. The printer commands are listed in appendix A in the order they are executed. Refer to *PCL 5 Printer Technical Reference Manual* for more information.

An example of how PCL printer commands are combined can be found on the Font List printout (see figure 6-14). The last 2 columns show the Print Sample and Escape Sequence used to select the font. The escape sequence (printer command) shown is a combination of several commands specifying the symbol set, spacing, pitch, point size, style, stroke weight, and typeface family.

The *PCL 5 Printer Technical Reference Manual* contains detailed information on printer command hierarchy.

HP-GL/2 Graphics Mode

PA30

The HP LaserJet IIIP printer provides the ability to print vector (line) graphics using the HP-GL/2 graphics language. HP-GL/2 has become an industry standard graphics language for pen plotters and is used by many software applications. Because PCL 5 contains HP-GL/2, you can now rotate text at *any* angle, create mirrored images of text, combine HP-GL/2 plots with high quality LaserJet fonts, and import existing HP-GL/2 files into word processing or desktop publishing files.

Using HP-GL/2 commands, you can "draw" circles, rectangles and lines that will print much more quickly than using standard PCL language raster graphics. HP-GL/2 commands allow you to create a graph (or import an existing HP-GL/2 graph) so that it can be scaled to a desired size and placed anywhere on the printed page.

Printing with HP-GL/2 requires leaving the PCL printer language mode and entering HP-GL/2 mode. Figure 5-5 displays the components of a typical HP-GL/2 command:

Note

Check with your software manufacturer to see which HP-GL/2 features are supported. If you are interested in programming with HP-GL/2 printer commands, order the *PCL 5 Printer Technical Reference Manual*.

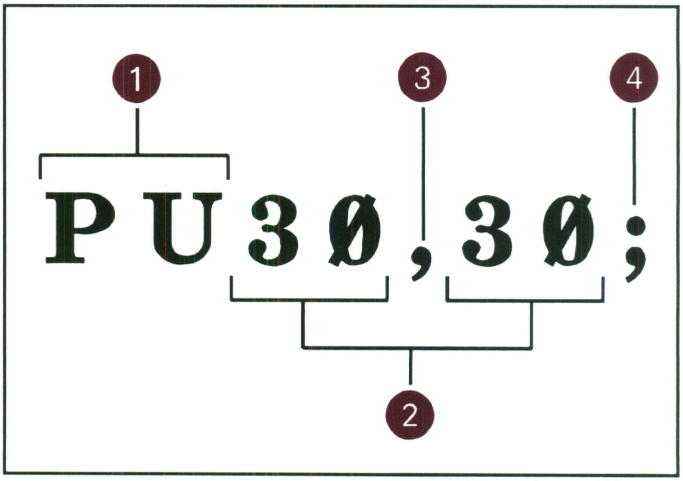


Figure 5-5. Sample HP-GL/2 Graphics Command

1. Mnemonic – begins command.
2. Parameter(s) – value field.
3. Separator(s) – between fields.
4. Terminator – ends command.

Commonly Used HP-GL/2 Graphics Commands

Table 5-3 lists some of the commonly used HP-GL/2 graphics language commands. Appendix A provides a complete list of all commands.

Table 5-3. Commonly Used HP-GL/2 Graphics Commands

Mnemonic	Command	Summary
IN	Initialize	Resets all programmable HP-GL/2 functions to their default settings.
CI	Circle	Draws the circumference of a circle using a specified radius and chord (arc) angle.
PD	Pen Down	Lowers the "pen" to the page (for drawing lines).
PU	Pen Up	Lifts the "pen" from the page (for cursor movement without drawing).
SP	Select Pen	The SP command must be used in order to enable printing.
EA	Edge Rectangle Absolute	Defines and outlines a rectangle using absolute coordinates.
PW	Pen Width	Specifies a new width for lines drawn by the logical pen. The default pen width is about 0.35 mm.

Using HP-GL/2 Graphics Commands

The easiest way to use HP-GL/2 graphics capabilities is through your software. Check your software manual or with your software manufacturer to see if they have drivers for the HP LaserJet IIIP printer using HP-GL/2 commands.

If your software does not automatically send HP-GL/2 graphics commands, you may be able to enter them directly into your job file using printer commands. Because many of these codes are complex, order the *PCL 5 Printer Technical Reference Manual* to learn about using these commands.

HP-GL/2 Example — Drawing Rectangles

Study this example to get a feel for how the PCL language and HP-GL/2 graphics commands can be used to "draw" a rectangle:

ᴱcE	Reset the printer.
ᴱc%0B	Enter HP-GL/2 mode.
IN;	Initialize HP-GL/2 mode.
SP1;	Select pen number 1 (black). You must select a pen to print HP-GL/2 images.
PW5;	Select a width of 5mm.
PU500,500	Specify absolute plotting and move to (500,500).
EA2500,1500;	Draw the outline of a rectangle, with the lower left corner being the current pen location (500,500) and the upper right corner being 2500,1500 plu*.
ᴱc%0A	Enter PCL mode.
ᴱcE	Reset and eject the page.

* One plotter unit (plu) equals 0.025mm or 0.00098 in. There are 40 plu per millimeter and 1016 plu per inch.

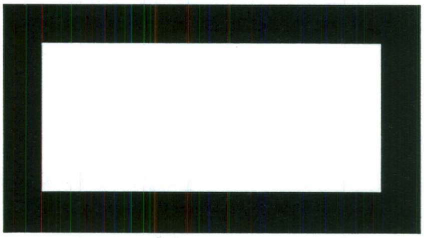


Figure 5-6.
Rectangle Created with the Above HP-GL/2 Commands

6

Using Type and Fonts

Introduction

The term **type** describes all the printed letters of the alphabet and other characters and symbols. "Type" can also describe just one character or a collection of characters. You can select type using your software, printer commands or the printer's control panel.

Hewlett-Packard offers type in the form of **scalable typefaces** and **bitmapped fonts,** both as part of the printer (internal) and from optional cartridge or disk-based products.

This chapter describes:

- The terms pertaining to type, fonts, and typography.
- The HP LaserJet IIIP printer type offering.
- The Font printout.
- How to install optional type and font products.
- How to select fonts with printer commands and the control panel.
- Special effects with type.

What Are Typefaces?

A **typeface** is the *name* of a design of characters and symbols. A typeface is a single variation in a typeface family. For example, Univers Medium is one typeface and Univers Medium Italic is another. Typefaces are the source of fonts.

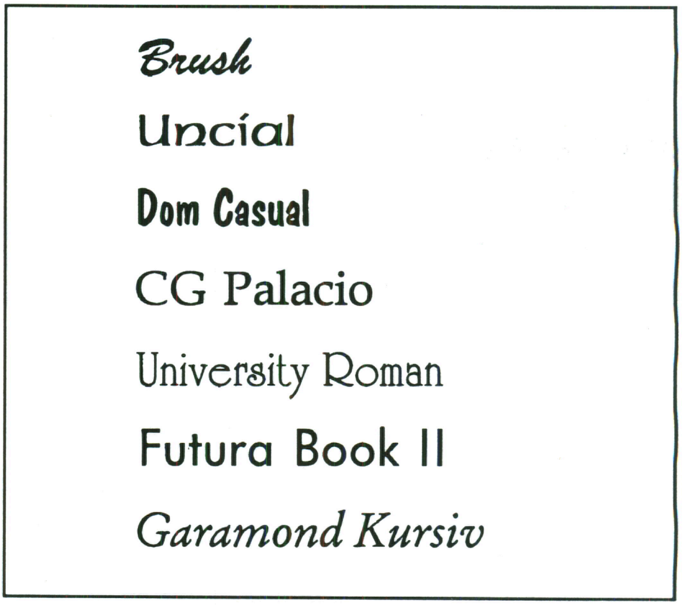


Figure 6-1. Sample Individual Typefaces

Scalable Typefaces

When typeface designs are converted to computer format (digitized) to be used at various sizes, they are called **scalable typefaces**. A unique mathematical formula within the printer converts scalable typefaces into printable fonts.

Scalable typefaces are not limited to a specific symbol set or point size. There are eight scalable typefaces built into the HP LaserJet IIIP printer (figure 6-4) and a growing list of optional scalable typeface products available from Hewlett-Packard on cartridges and floppy diskettes.

Bitmapped fonts and scalable fonts, which are created *from* scalable typefaces, are described in the next section.

Note

To use disk-based scalable typefaces, you must either have software that incorporates AutoFont Support (also called "TFM files"); or you must use the Type Director 2.0 font management program to install and scale your typefaces.

What Are Fonts?

Fonts are created from typeface designs for a unique device such as a printer or screen display. Fonts are limited collections of characters and symbols in that they have *specific attributes* like style and stroke weight. Two kinds of fonts can be used within the HP LaserJet IIIP printer:

- Bitmapped fonts.
- Scalable fonts.

Bitmapped Fonts

Bitmapped printer fonts are made of tiny dot-by-dot patterns in pre-defined sizes. Bitmapped fonts have fixed **point size**, **pitch**, **style**, and **symbol set** attributes. For example, 10 point Courier is one font and 12 point Courier Bold is another font. Bitmapped fonts cannot be scaled (see figure 6-2). Fourteen bitmapped fonts are contained inside the HP LaserJet IIIP printer (figure 6-5). Optional bitmapped font cartridges are also available.

Scalable Fonts

Scalable fonts are made *from* the eight internal scalable typefaces (figure 6-4) and from optional disk-based or cartridge-based scalable typeface products. Characters made from scalable fonts are created *within* the printer on a character-by-character basis ensuring high speed and font quality. Fonts can be scaled up to 999.75 points in quarter-point increments (see figure 6-3).

ABCDEFGHIJKLMNOPQRSTUVWXYZ1234567890

Figure 6-2. Sample Bitmapped Font — Limited To A Fixed Size

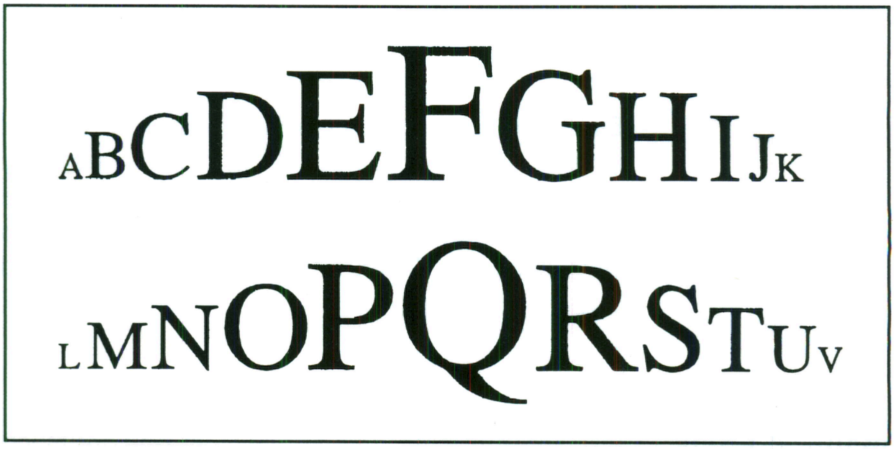


Figure 6-3. Sample Scalable Font — Can Be Scaled into Many Sizes

Bitmapped Versus Scalable Fonts

Because each change in point size (or symbol set) requires a separate font, bitmapped fonts can take up more printer memory than scalable fonts. If you use a wide variety of point sizes, one scalable font can replace the need for many discrete-sized bitmapped fonts.

All fonts and typefaces are selected using the same printer commands. If a bitmapped version of a font is already available in the printer, the HP LaserJet IIIP printer will use it first. If a bitmapped version is not available, and a scalable font is, the printer scales the font to the size you specify.

HP LaserJet IIIP Printer Type Offering

Your printer comes with eight scalable typefaces and fourteen bitmapped fonts built in. Figure 6-4 displays the scalable typefaces (available in sizes up to 999.75 point). Figure 6-5, shows seven of the bitmapped fonts in portrait orientation (the other seven fonts are landscape versions of these).

CG Times
CG Times Italic
CG Times Bold
CG Times Bold Italic
Univers Medium
Univers Medium Italic
Univers Bold
Univers Bold Italic

Figure 6-4. Internal Scalable Typefaces

Line Printer 16.67 pitch, 8.5 point
Courier 12 pitch, 10 point
Courier Italic 12 pitch, 10 point
Courier Bold 12 pitch, 10 point
Courier 10 pitch, 12 point
Courier Italic 10 pitch, 12 point
Courier Bold 10 pitch, 12 point

Figure 6-5. Sample of Internal Bitmapped Fonts

Default Font

Courier 10 pitch, 12 point (medium) is the factory **default font** the printer uses unless you:

1. Send a font selection command (using software or a printer command) to request a font in place of the default.
2. Select a different default font using the control panel.
3. Insert a font cartridge with a default font. Some earlier versions of HP font cartridges have a designated default font (later versions do not).

Point Size

The height of fonts is measured in units called points. There are approximately 72 points per inch. A point size of 36 would be approximately a half-inch high if measured from the top of the upper-case letters to the bottom of the lower-case letters (for example, the tail of the letter "y"). The text you are reading now is 10 point.

If you use scalable fonts, the HP LaserJet IIIP printer has the ability to scale fonts in point sizes ranging from 0.25 to 999.75 (approximately 13.8 inches).

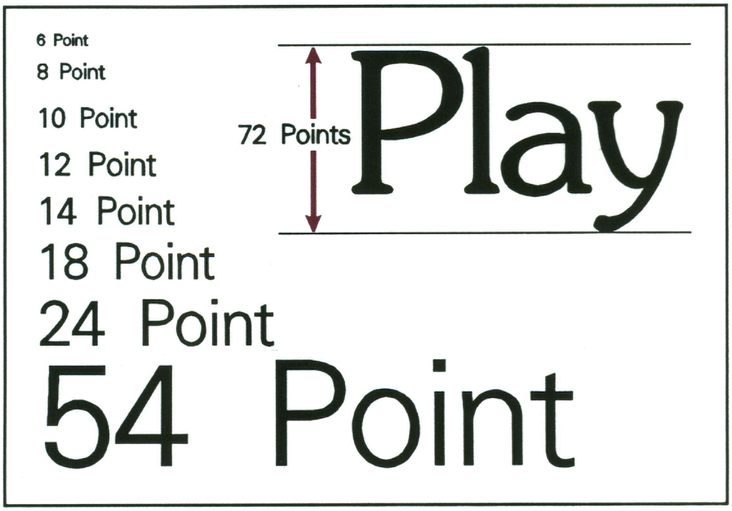

6 Point
8 Point
10 Point
12 Point
14 Point
18 Point
24 Point
54 Point
72 Points
Play

Figure 6-6. Point Size Examples

Choosing Point Sizes

With so many point size choices available for scalable fonts, you may want to begin using fonts in standard sizes.

As a general rule, select a point size based on the following kinds of work:

Kind of Work	Point Size
Footnotes	6 to 8
Standard body text	10 to 14
Headlines	14 and above

Spacing

All fonts use either fixed spacing or proportional spacing.

With **fixed spacing,** the space allowed for the width of each character is the same. For example, a "w" and an "i" take up the same amount of space (see figure 6-7). Typewriter-like typefaces such as Courier and Letter Gothic use fixed spacing.

Fixed spaced fonts are often used in tabular work because every character or number easily aligns. Use fixed spaced fonts for spreadsheets, lists, tables and other data processing work. Fixed spaced fonts can also be used for "personal" memos, where a crisp typewritten look is desired.

With **proportional spacing,** the width allowed for each character varies. For example, a "w" has a much larger width than an "i." Publication typefaces, like CG Times and Univers (and Century Schoolbook, the typeface of this text) are proportionally spaced.

Proportionally spaced fonts have the typesetter-quality look of professional publications. Use proportionally spaced fonts for such work as reports, proposals, manuals or letters.

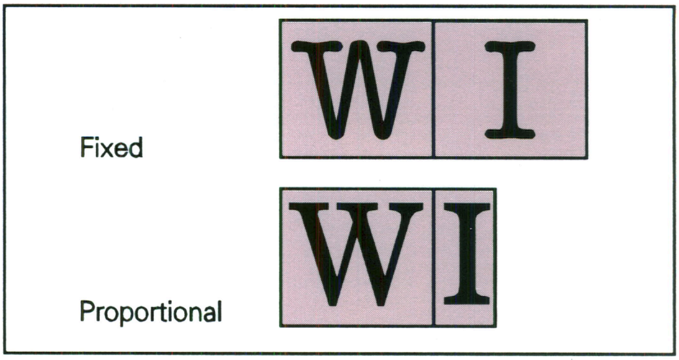


Figure 6-7. Fixed and Proportional Spacing

Pitch

Pitch refers to the number of characters that can be printed in one horizontal inch. For example, a font with a pitch of 10 will print 10 characters for every horizontal inch of text. Pitch applies only to fonts with fixed spacing. Fonts with proportional spacing have no specified pitch.

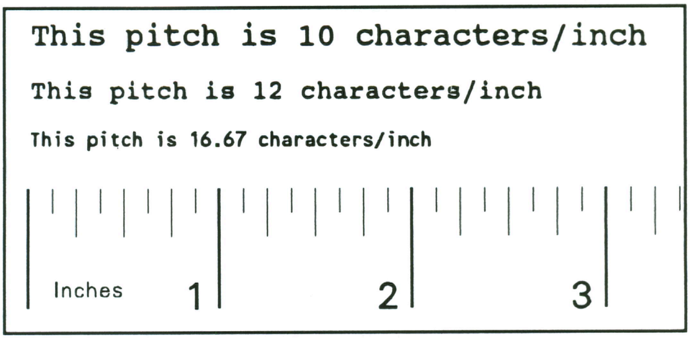

This pitch is 10 characters/inch
This pitch is 12 characters/inch
This pitch is 16.67 characters/inch
Inches
1
2
3

Figure 6-8. Pitch

Style and Stroke Weight

The PCL language term **style** signifies the *shape* of the typeface, such as upright, condensed or italic (figure 6-9). The PCL language term **stroke weight** refers to the *thickness* of print, such as light, medium, bold and extrabold (figure 6-10). Another term, **treatment,** refers to any variation in a typeface family.

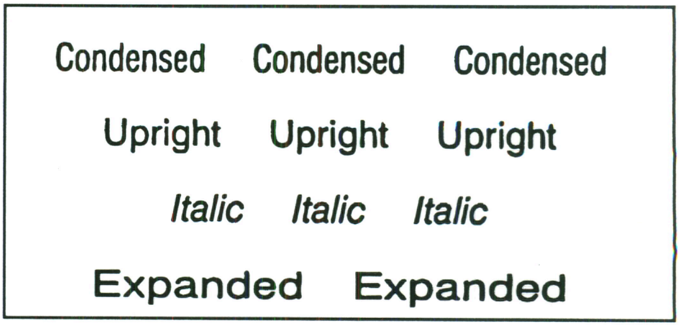

Condensed Condensed Condensed
Upright Upright Upright
Italic Italic Italic
Expanded Expanded

Figure 6-9. Style

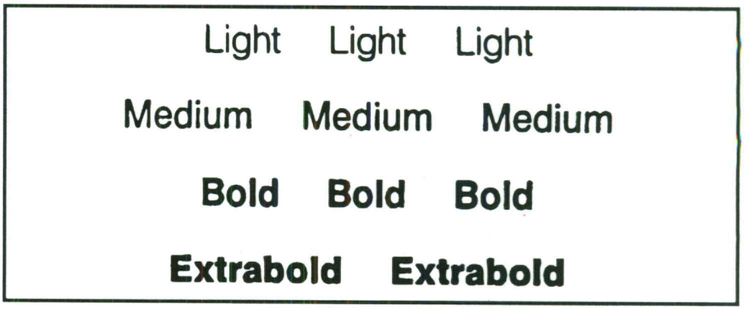

Light Light Light
Medium Medium Medium
Bold Bold Bold
Extrabold Extrabold

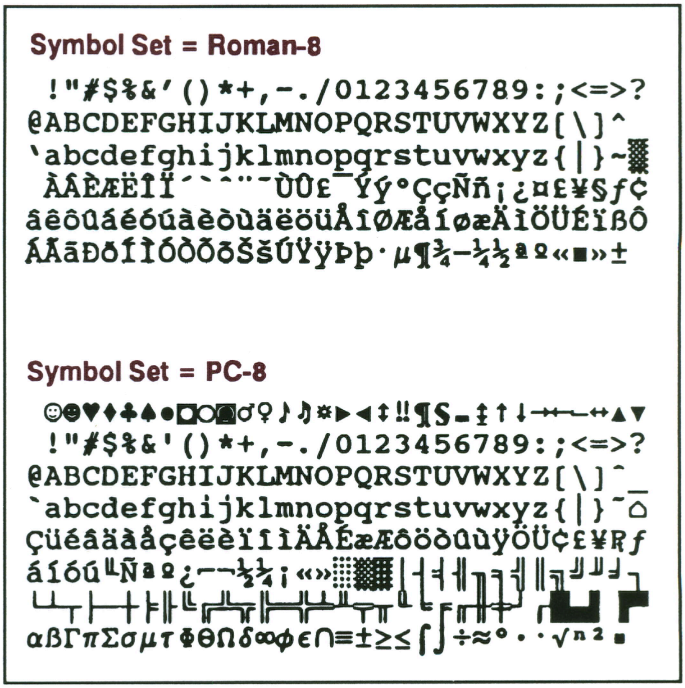
Figure 6-10. Stroke Weight

Symbol Set

A **symbol set** is a specific collection of alphabetic, numeric and special symbols in a font. Though a typeface can contain hundreds of different symbols, only a sub-group is available in any one font. These sub-groupings (symbol sets) are defined for specific application or language requirements. For example, the Math-8 symbol set supports scientific applications.

Your software application may have special symbol set requirements; check your software manual. Appendix A displays tables containing all the internal HP LaserJet IIIP printer symbol sets.

Figure 6-11 shows two different symbol sets available in the Courier typeface. Note that the two symbol sets contain many characters in common, but each has some characters not found in the other.



Symbol Set = Roman-8

```
 !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^
`abcdefghijklmnopqrstuvwxyz{|}~▒
 ÀÂÈÆËÎÏ´`ˆ¨˜ÙÛ₤¯Ýý°ÇçÑñ¡¿¤£¥§ƒ¢
âêôûáéóúàèòùäëöüÅîØÆåíøæÄìÖÜÉïßÔ
ÁÃãÐðÍÌÓÒÕõŠšÚŸÿÞþ·µ¶¾—¼½ªº«■»±
```

Symbol Set = PC-8

```
 ☺☻♥♦♣♠•◘○◙♂♀♪♫☼►◄↕‼¶§▬↨↑↓→←∟↔▲▼
 !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
`abcdefghijklmnopqrstuvwxyz{|}~⌂
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒ
áíóú╙Ñªº¿⌐¬½¼¡«»░▒▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀
αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

Figure 6-11. Symbol Sets

The Font Rotation Feature

Whether or not the original font is in the orientation or print direction you want, the HP LaserJet IIIP printer can automatically rotate type in 90° increments. Figure 6-12 shows a single portrait font automatically rotated using the print direction command.

For example, the fonts on some font cartridges are available only in portrait orientation. If you select landscape orientation for your job, the HP LaserJet IIIP printer will automatically rotate the font 90 degrees.

Scalable fonts can be rotated to any angle (degree) using HP-GL/2 commands.

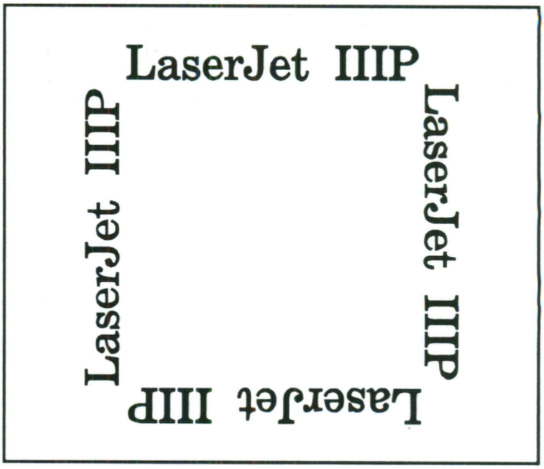
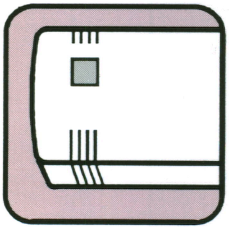


Figure 6-12. Multiple Print Directions

Typeface and Font Cartridges



Scalable typeface and bitmapped font cartridges supplement the printer's internal font offering. Many optional cartridges are available. Refer to your *HP LaserJet Accessory Catalog* for a list of Hewlett-Packard typeface and font cartridges, and for purchasing information.

Caution

Do not insert or remove typeface or font cartridges while the printer is on-line. (The printer is off-line when the green On-Line indicator is off.) In addition, do not remove cartridges while the Form Feed indicator is lit. This causes a message to appear. If this happens you must power the printer OFF and back ON again to recover. Any data in printer memory is lost.

Installing Typeface and Font Cartridges

To install a cartridge in the printer:

1. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
2. Hold the cartridge right side up. (The cartridge label should be on the top of the cartridge.)
3. Slide the cartridge into the slot on the right side of the printer and push until the cartridge is firmly in place (figure 6-13). You should hear and feel the cartridge snap into place. **Don't be afraid to push very hard.**

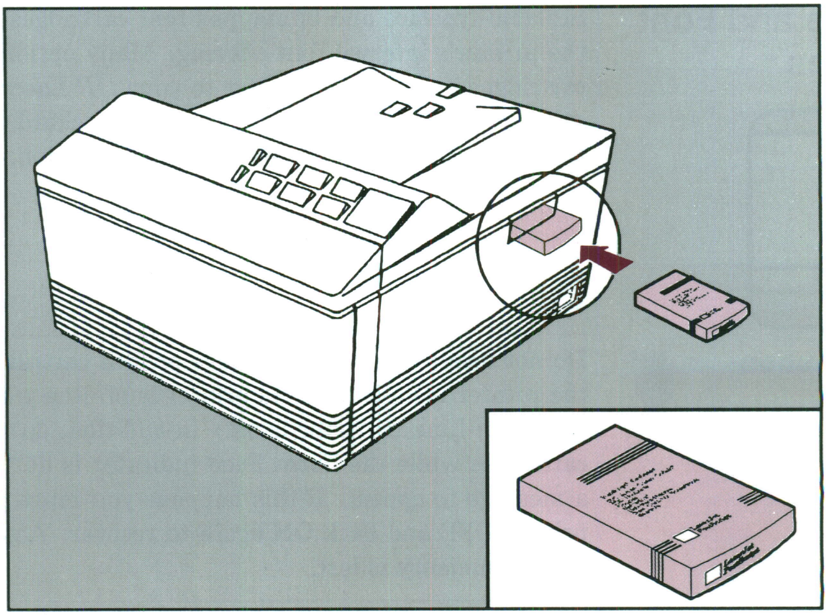


Figure 6-13. Inserting a Cartridge

4. Click the MENU key until `FONT SRC` appears in the first line of the display.
5. Click the +/- key repeatedly until `C` (Cartridge) appears in the display. If `C` appears in the display, the cartridge is properly installed.

Note

If `C` (Cartridge) does not appear in the display, the font cartridge is not installed correctly. Make sure the font cartridge is **right-side up** (the label is on the top of the cartridge) and properly seated (**you should feel the cartridge snap into place**).

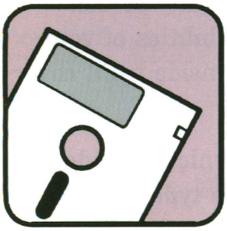
6. Click the ON LINE key to return the printer on-line.

Selecting Default Cartridge Fonts

If you are using a cartridge font as your default, remember the following:

- Do not remove or insert the cartridge while the printer is on-line.
- Do not remove a cartridge while the Form Feed indicator is lit.
- The printer returns to the factory default if a cartridge containing a default font is removed.
- Some early HP font cartridges contain a default font, noted by an asterisk (*) on the cartridge label. The printer will use the cartridge default font unless you select a different font using the control panel.

Soft Fonts



Soft fonts are bitmapped fonts or scalable fonts that can be transferred from disks in your computer to the printer's memory. The process of transferring soft fonts from your computer to the printer is called **downloading.** Soft fonts are sometimes referred to as *downloadable fonts* or *disk-based* fonts.

Hewlett-Packard offers an extensive line of optional disk-based HP soft fonts and scalable typefaces. Refer to the inside front cover of this manual for ordering information.

Downloading Bitmapped and Scalable Fonts

Software packages vary in the kinds of font products they can download. Some packages automatically download any kind of font for you; others may only download bitmapped fonts. Check the font section of your software manual for specific instructions.

If your software does not download fonts for you, Hewlett-Packard provides you with several methods, such as the *Type Director* program, to make the downloading process easy.

Note

All downloadable soft fonts are erased from printer memory when the printer is powered off.

Downloading Fonts Using Type Director

Type Director is Hewlett-Packard's typeface and font management program. Use *Type Director* to install scalable typefaces and generate scalable fonts for downloading. *Type Director* also helps you create high quality screen fonts to complement and enhance the capabilities of your compatible software application. (See the inside front cover of this manual for ordering information.)

Refer to the *Type Director User's Guide*, which provides complete instructions for installing scalable typeface products and downloading scalable fonts.

Permanent or Temporary Status

Soft font downloading programs, like *Type Director,* allow you to assign either permanent or temporary status for soft fonts.

Permanent means that the fonts will remain in the printer memory until a delete font command is sent through your software, the printer is turned off, or you print a Font Printout or printer Self test. **Temporary** means that the fonts will be erased anytime a printer reset command or delete font command is sent, or when the printer is turned off. Because many software applications send the printer a reset command when you print a job, temporary status is not recommended when downloading soft fonts through a utility such as Type Director.

Note

The Font Printout only displays soft fonts downloaded as "permanent."

Soft Font Identification Numbers

Soft fonts can be identified by two numbers on the Font List printout. The "Font #" field is used solely for font selection from the printer's control panel. The "Font ID" field is used for soft font selection through printer commands or software applications.

Caution

Generating the Font Printout deletes all *temporary soft fonts*. Because of this, temporary soft fonts do not appear on the printout.

Powering off the printer deletes all soft fonts from memory.

Soft Font Hints

The following hints will help you use soft fonts efficiently. They are especially helpful when several users are sharing one printer.

- Powering off the printer deletes all downloaded soft fonts. You must download them again to use them.
- The printer has a limited amount of memory in which to store fonts. Each occupies a portion of memory that cannot be used for anything else until you delete the font.
- If you use a large number of downloaded soft fonts, or if you create and use very large font sizes, consider purchasing additional printer memory. This expands the printer memory, allowing more fonts to be stored. (See appendix F.)
- If the printer is shared among several users, decide which soft fonts to download and the ID numbers to assign them. Making these decisions helps avoid problems such as downloading duplicate fonts or deleting fonts needed by others.

The Font Printout

The Font Printout lists all the scalable and bitmapped fonts currently available in your printer and displays a print sample of each font. You will find the Font Printout a helpful tool because the exact printer command (escape sequence) to access individual fonts is displayed.

Caution

Generating the Font Printout deletes all *temporary soft fonts*. Because of this, temporary soft fonts do not appear on the printout.

To print a list of the printer's current fonts:

1. Click the ON LINE key to take the printer off-line. The green On-line indicator should be off.
2. Hold down the Alt key and click the Print Fonts key.

`06 FONT PRINTOUT` appears in the display and several pages are printed. There may be some delay in printing the Font Printout while the printer creates the fonts.

The Font Printout contains 12 columns of information (see figure 6-14):

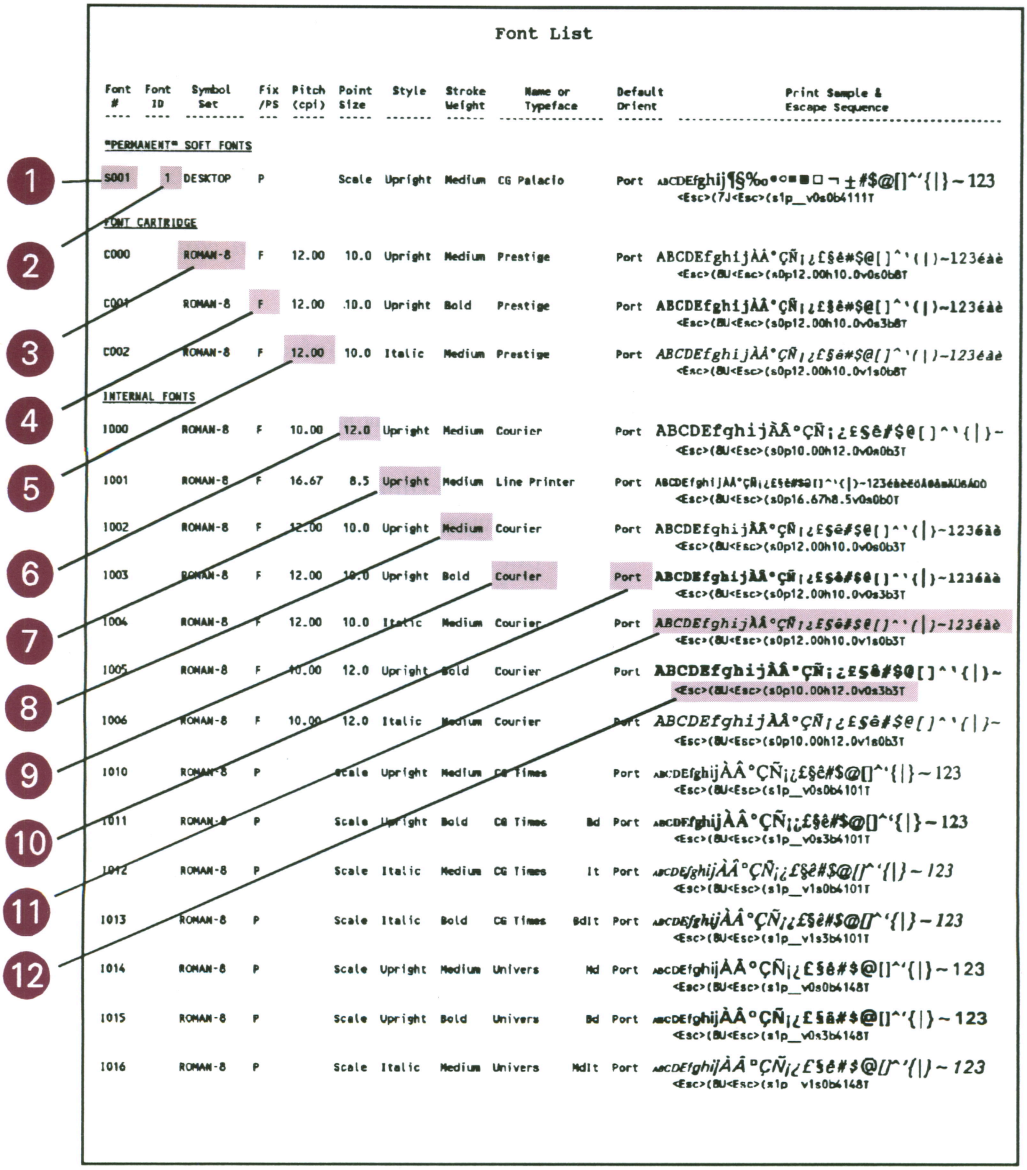
1. *Font #* is the number assigned by the printer that you use to select internal, cartridge, or downloaded fonts from the control panel. (Don't confuse font *number* with the soft font *ID*, described next.)

   The letter preceding the font number shows the source of the font.
   - S = Permanent soft font, residing in printer memory.
   - C = Fonts in the cartridge slot.
   - I = Internal printer fonts.
2. *Font ID* is an ID number you assign to fonts. This is often used when you download fonts through your software.
3. *Symbol Set* is a specific collection of characters and symbols associated with a font.

4. *Fix/PS* indicates whether the font has fixed spacing or proportional spacing.
5. *Pitch (cpi)* is the number of characters per inch of a fixed-spaced font. This field contains "Scale" for a fixed-spaced scalable typeface, and is blank for a proportionally-spaced typeface.
6. *Point Size* is the height of a font. This column contains "Scale" for a proportionally-spaced scalable typeface and is blank for a fixed-space scalable typeface.
7. *Style* indicates the appearance and posture of the font, such as italic, upright, or condensed.
8. *Stroke Weight* is a font treatment, such as light, medium, or bold.
9. *Name or Typeface* is the name of the font or typeface.
10. *Default Orient* is the orientation of the font.
11. *Print Sample* is an example that shows what the characters look like.

    If the print sample represents a scalable typeface, the characters will be shown in an ascending point size.
12. *Escape Sequence* contains the **escape sequence** that selects the designated font.

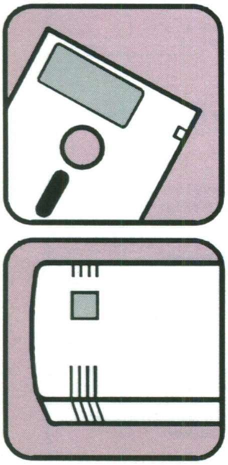
    The escape sequence for a scalable font (proportional or non-proportional) will show a blank space (indicated by an underscore, _____) followed by v or h. In the escape sequence, you must supply the corresponding point size (for example, 14.25v) or pitch (for example, 12.00h).


1
2
3
4
5
6
7
8
9
10
11
12

```
                                         Font List

Font  Font   Symbol    Fix  Pitch  Point   Style   Stroke      Name or        Default                  Print Sample &
 #     ID     Set      /PS  (cpi)  Size            Weight      Typeface       Orient                   Escape Sequence
----  ----  ---------  ---  -----  -----  -------  ------  ---------------    -------  ----------------------------------------------

"PERMANENT" SOFT FONTS

S001    1  DESKTOP     P           Scale  Upright  Medium  CG Palacio              Port  ABCDEfghij¶§‰•○■■□¬±#$@[]^'{|}~123
                                                                                           <Esc>(7J<Esc>(s1p__v0s0b4111T
FONT CARTRIDGE

C000        ROMAN-8    F    12.00   10.0  Upright  Medium  Prestige                Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'(|)~123éàè
                                                                                           <Esc>(8U<Esc>(s0p12.00h10.0v0s0b8T
C001        ROMAN-8    F    12.00   10.0  Upright  Bold    Prestige                Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'(|)~123éàè
                                                                                           <Esc>(8U<Esc>(s0p12.00h10.0v0s3b8T
C002        ROMAN-8    F    12.00   10.0  Italic   Medium  Prestige                Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'(|)~123éàè
                                                                                           <Esc>(8U<Esc>(s0p12.00h10.0v1s0b8T
INTERNAL FONTS

1000        ROMAN-8    F    10.00   12.0  Upright  Medium  Courier                 Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~
                                                                                           <Esc>(8U<Esc>(s0p10.00h12.0v0s0b3T
1001        ROMAN-8    F    16.67    8.5  Upright  Medium  Line Printer            Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123éàèöÅØåæÄÜßÁÖÒ
                                                                                           <Esc>(8U<Esc>(s0p16.67h8.5v0s0b0T
1002        ROMAN-8    F    12.00   10.0  Upright  Medium  Courier                 Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123éàè
                                                                                           <Esc>(8U<Esc>(s0p12.00h10.0v0s0b3T
1003        ROMAN-8    F    12.00   10.0  Upright  Bold    Courier                 Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123éàè
                                                                                           <Esc>(8U<Esc>(s0p12.00h10.0v0s3b3T
1004        ROMAN-8    F    12.00   10.0  Italic   Medium  Courier                 Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123éàè
                                                                                           <Esc>(8U<Esc>(s0p12.00h10.0v1s0b3T
1005        ROMAN-8    F    10.00   12.0  Upright  Bold    Courier                 Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~
                                                                                           <Esc>(8U<Esc>(s0p10.00h12.0v0s3b3T
1006        ROMAN-8    F    10.00   12.0  Italic   Medium  Courier                 Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~
                                                                                           <Esc>(8U<Esc>(s0p10.00h12.0v1s0b3T
1010        ROMAN-8    P           Scale  Upright  Medium  CG Times                Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123
                                                                                           <Esc>(8U<Esc>(s1p__v0s0b4101T
1011        ROMAN-8    P           Scale  Upright  Bold    CG Times          Bd    Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123
                                                                                           <Esc>(8U<Esc>(s1p__v0s3b4101T
1012        ROMAN-8    P           Scale  Italic   Medium  CG Times          It    Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123
                                                                                           <Esc>(8U<Esc>(s1p__v1s0b4101T
1013        ROMAN-8    P           Scale  Italic   Bold    CG Times          BdIt  Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123
                                                                                           <Esc>(8U<Esc>(s1p__v1s3b4101T
1014        ROMAN-8    P           Scale  Upright  Medium  Univers           Md    Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123
                                                                                           <Esc>(8U<Esc>(s1p__v0s0b4148T
1015        ROMAN-8    P           Scale  Upright  Bold    Univers           Bd    Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123
                                                                                           <Esc>(8U<Esc>(s1p__v0s3b4148T
1016        ROMAN-8    P           Scale  Italic   Medium  Univers           MdIt  Port  ABCDEfghijÀÂ°ÇÑ¡¿£§ê#$@[]^'{|}~123
                                                                                           <Esc>(8U<Esc>(s1p  v1s0b4148T
```

Figure 6-14. Font Printout

Selecting Fonts



You can select fonts using your application software, printer commands, or by using the control panel. Ask yourself the following questions to determine the best way for you:

1. Does your software support the scalable typefaces and bitmapped fonts you want to use? To find out:
    a. Check your software manual.
    b. Check the *Software Application Notes* that came with the printer for information about many popular programs.
    c. Call your software manufacturer for the most current information on printer drivers.
2. Do you know how your software selects fonts? Consider:
    a. Some software allows you to select a limited number of fonts at one time (for example, WordPerfect 4.2).
    b. Some software properly supports only fixed-spaced fonts (for example, Lotus 1-2-3, release 2.01).
    c. Some software requires printer drivers and spacing tables to select fonts for you (for example, Microsoft Word and Ventura Publisher).

If you do not select a font, the printer uses the current default font. The **factory** default font is Courier, 12 point, 10 pitch, upright, medium-weight using the Roman-8 symbol set. The current default will different if you have manually changed the control panel Printing Menu setting or installed a cartridge with a default font.

Selection Priority

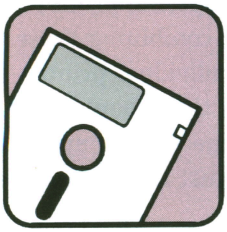
A desired font may be available from more than one source. In this case, the printer selects the source in the following order:

- The printer selects a downloaded soft font.
- If the requested font is not available as a soft font, the printer selects the font cartridge.
- If the requested font is not available on cartridge, the printer selects an internal font.

When choosing a font, the font must be available from one of these sources. If the font you request is not available, the printer selects the closest match based on individual characteristics.

If both a scalable typeface and a bitmapped font are available from the same source, the bitmapped font is used when the characteristics match. Otherwise, the font derived from the scalable typeface is used.

Selecting Fonts Using Software Applications



The easiest way to select scalable typefaces and bitmapped fonts is through your software application.

Many software applications support the fonts used with the HP LaserJet IIIP printer. You can select fonts using your software instead of entering printer commands.

Most software applications allow you to define the scalable typefaces and bitmapped fonts to use in your documents. You usually make these definitions as part of the application's installation or set-up procedure. You then access your type using the procedures for your particular software. For example:

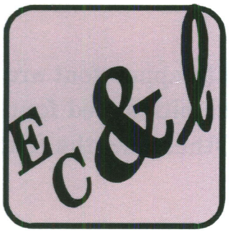
- MultiMate assigns a unique font letter to each font. To change from one font to another, change the MultiMate font letter.

- Microsoft Word, Microsoft Windows, and WordPerfect select fonts by specifying the font name, size and style.

Check your software manual to find out which method your software uses to select fonts.

The *Software Application Notes* manual included with your HP LaserJet IIIP printer also explains how some of the most popular software applications select fonts.

Selecting Fonts Using Printer Commands



Printer commands for selecting fonts are based on descriptions of the individual characteristics of a font. If the exact font you want is not available, the font with the closest characteristics will be substituted. Because of this process, it is important that the printer commands be entered in the following order: symbol set, spacing, pitch, point size, style, stroke weight, and typeface family.

The exact printer commands (escape sequence) to select fonts are displayed on the Font Printout (see "The Font Printout" section earlier in this chapter). Use of the entire command ensures correct font selection.

Each characteristic of a font has a specific printer command. You can select fonts by combining these commands. Table 6-1 shows the individual printer commands and the order in which they should appear. The ID represents a numerical value and an uppercase alphabetical designator that you must insert into the command.

Table 6-1. Font Characteristic Commands

Symbol Set	Spacing	Pitch	Point Size	Style	Stroke Weight	Typeface Family
Ec(ID	Ec(s#P	Ec(s#H	Ec(s#V	Ec(s#S	Ec(s#B	Ec(s#T

The commands to select Roman-8, proportional, 12 point, italic, medium Univers font look like this:

Ec(8U

Ec(s1P

Ec(s12V

Ec(s1S

Ec(s0B

Ec(s4148T

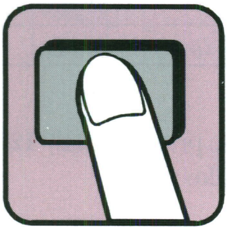
When combined, the command looks like this:

Ec(8U Ec(s1p12v1s0b4148T

The printer commands you need to select the internal

Ec(8U bitmapped fonts and scalable typefaces are shown on the Font Printout (figure 6-14). Refer to appendix A for a complete list of printer commands and to "Combining PCL Printer Commands" on page 5-16 for more information on how to combine (shorten) printer commands.

Selecting Fonts Using the Control Panel



If your software does not allow you to specify fonts, you can select any of the internal, cartridge or permanent downloadable soft fonts through the control panel.

Example — Selecting Fonts From the Control Panel

The following example shows how to select a cartridge, soft, or internal font.

1. If you are using a font cartridge, make sure the font cartridge is properly installed, and that the cartridge label is facing up. **When a cartridge is inserted you should feel it snap into place. Do not be afraid to push hard on the cartridge.**
2. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
3. Hold down the Alt key and click Print Fonts to print a list of all available fonts. (`06 FONT PRINTOUT` appears on the display.) Refer to "The Font Printout" on page 6-19 for information on understanding the font printout.
4. Find the font number that corresponds to the font you wish to use. (Refer to "The Font Printout," on page 6-21 for an explanation of the font printout.)
5. Click MENU until `FONT SRC` appears in the first line of the display.
6. Click +/— to select `C` (for cartridge fonts), `S` (for soft fonts), or `I` (for internal fonts).

Note

If `C` (Cartridge) does not appear in the display, the font cartridge is not installed correctly. Make sure the font cartridge is **right-side up** (the label is on the top of the cartridge) and properly seated (**you should feel the cartridge snap into place.**)

If `S` does not appear in the display, there are no soft fonts permanently downloaded to the printer.

---

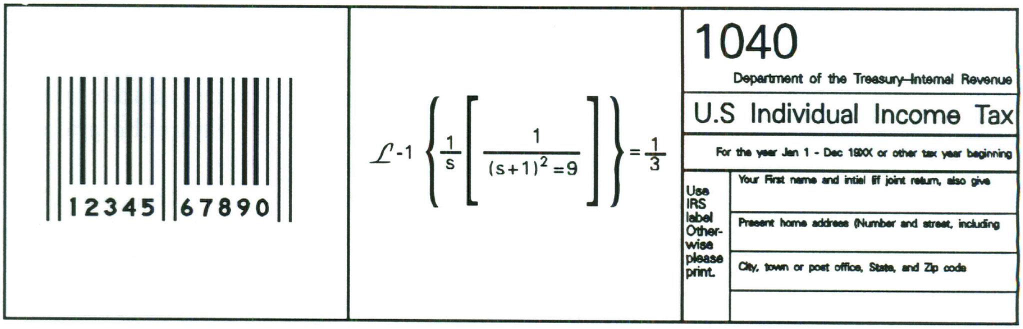
7. Click ENTER to save the selection. An asterisk (*) appears in the display.
8. Click MENU again to display FONT NUM in the first line of the display.
9. Click +/— until the number that corresponds to the font you wish to use appears, such as I017 or S007.
10. Click the ENTER key to save your selection. An asterisk (*) appears in the display.
11. Click the MENU key.
    a. If you have selected a proportionally-spaced scalable typeface, PT. SIZE appears in the display. Enter the font size you desire by clicking the +/— key.
    b. If you have selected a fixed-space scalable font, PITCH appears in the display. Enter the pitch you desire by clicking the +/— key.
    c. If you have not selected a scalable typeface, JOB SIZE appears in the first line of the display. Skip to step 13.
12. Click the ENTER key to save the selection. An asterisk (*) appears in the display.
13. Click ON LINE to exit the menu and put the printer back on-line.

Note

If you get a 10 RESET TO SAVE message, refer to page 8-4.

Special Application Fonts

Hewlett-Packard designs some fonts for special applications such as printing bar codes, preparing presentation slides, or producing special symbols such as those used in legal documents or in mathematical formulas. Some of the applications are shown in figure 6-15. For ordering information see your dealer or the *HP LaserJet Accessory Catalog*.



$$\mathcal{L}^{-1}\left\{\frac{1}{s}\left[\frac{1}{(s+1)^2=9}\right]\right\}=\frac{1}{3}$$

1040

Department of the Treasury–Internal Revenue

U.S Individual Income Tax

For the year Jan 1 - Dec 19XX or other tax year beginning

Use IRS label Other-wise please print.

Your First name and intial (if joint return, also give

Present home address (Number and street, including

City, town or post office, State, and Zip code

Figure 6-15. Special Applications Using Fonts

Custom Font Cartridges, Macro Cartridges, and Soft Fonts

You can design your own soft font or macro file that can be printed on your HP LaserJet IIIP printer, refer to *PCL 5 Printer Technical Reference Manual* for more information. If your particular application requires a special font cartridge or a macro file in a macro cartridge, contact:

Hewlett-Packard Boise Printer Division
Attention: Product Specials MS #2100
11311 Chinden Blvd.
Boise, Idaho 83714 USA
(208) 323-3684

Advanced Special Effects with Type

In addition to typeface scaling, your HP LaserJet IIIP printer can work with some application software to create advanced special effects with type. Check with your software manufacturer to see which of the following effects, if any, are supported by your application software:

- Printing at any angle in one-degree increments.
- White letters on a black background (reverse printing).
- Multiple print directions on the same page.
- Mirrored text.
- Spirals, curves, outlines and shadows.
- Outlined letters filled with gray shades or patterns.
- Type condensed, expanded or slanted.

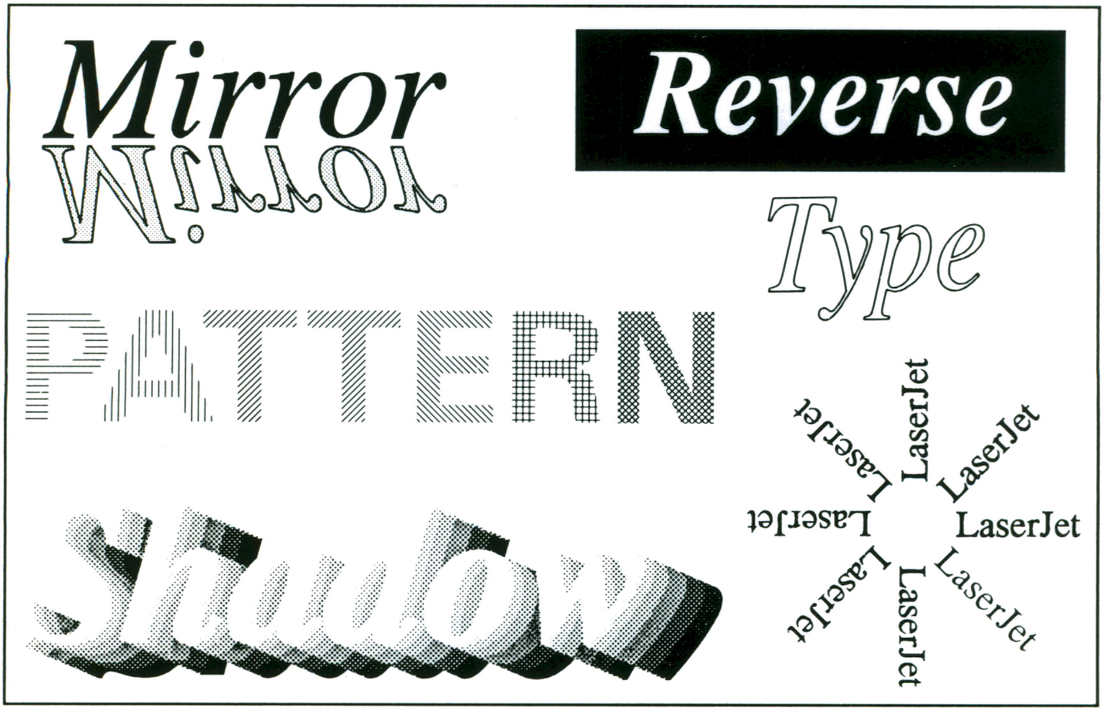
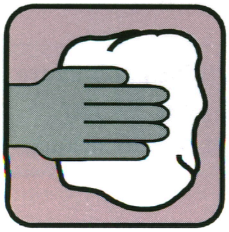


Figure 6-16. Some Special Effects With Type

7

Maintenance and Adjustments

Introduction



This chapter explains how to optimize your printer's performance by cleaning it and making print quality adjustments.

The following is a list of topics found in this chapter:

- Storing the toner cartridge.
- Replacing the toner cartridge.
- Extending the life of the toner cartridge.
- Cleaning the inside of your printer.
- Generating a page of cleaning paper.
- Using the printer-generated cleaning paper to clean the inside of the printer.
- Cleaning the outside of your printer.
- Adjusting the print density.
- Adjusting Resolution Enhancement levels for optimum print quality.

Ensuring Good Print Quality

If your print is coming out too light or too dark on either text or graphics, you can adjust the print density using the density control slide. Refer to the section "Adjusting Print Density" on page 7-23 to correct these problems.

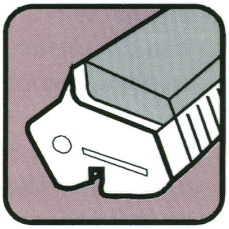
To obtain the clearest, sharpest images, you should use paper manufactured specifically for photocopying. Generally, this type of paper is manufactured to specifications that promote excellent image formation and paper handling.

Note

Always test samples of the paper you plan to buy to ensure that it meets the performance standards of your printer. Refer to appendix E for more detailed paper specifications.

Each time you install a new toner cartridge, you must run a self test to generate a sheet of cleaning paper. Then you must use that printer-generated cleaning paper to clean the inside of the printer. Refer to "Cleaning the Printer" on page 7-13 for instructions.

Using Toner Cartridges



The toner (EP-L) cartridge in your Hewlett-Packard HP LaserJet IIIP printer has been designed to simplify the replacement of your printer's "consumable" items. The toner cartridge contains a print drum and a supply of toner.

A toner cartridge will print approximately 3500 pages if you are using a typical word processing application, with text covering about 5% of the page. If you regularly print pages with less text coverage, such as short memos, your toner cartridge should print more than 3500 pages. However, if you routinely print both text and graphics, your cartridge probably won't print the full 3500 pages.

Caution

Refilling a used toner cartridge is not recommended. Damage to the printer may occur if an improperly refilled cartridge is used. Service required as a result of using refilled cartridges will not be covered by the HP warranty or service agreements.

Storing the Toner Cartridge

If the toner cartridge must be removed from the printer, always store the cartridge in:

- The aluminum bag in which it was originally packaged.
- A dark cabinet, away from direct sunlight.
- A horizontal position, not on its end.
- Temperatures between 32° and 95°F (0° and 35°C).

Caution

Never expose the toner cartridge to direct sunlight. In addtion, never expose the toner cartridge to room light for more than a few minutes. Light can cause the electrophotographic drum inside the cartridge to degrade and become damaged.

Replacing the Toner Cartridge

When the toner supply in the toner (EP-L) cartridge gets low, some parts of a page may exhibit light printing or no printing at all. You will need to replace the toner cartridge when the toner has been used up. You may be able to extend the life of your cartridge by following the directions found in "Extending the Life of the Toner Cartridge," on page 7-12.

Caution

To prevent damage to your printer, you must clean the inside of the printer each time you replace the toner cartridge. Follow the steps for using the printer-generated cleaning paper in the section "Cleaning the Printer" on page 7-13.

Always handle toner cartridges gently and be sure to store them properly. Use the following procedure each time you replace a cartridge.

1. Pull down on the Multi-Purpose (MP) tray to open it.
2. If the Multi-Purpose tray is already open and has paper in it, remove the paper before proceeding.

3. Push the release button upward ① and pull on the paper path door to open it ②.

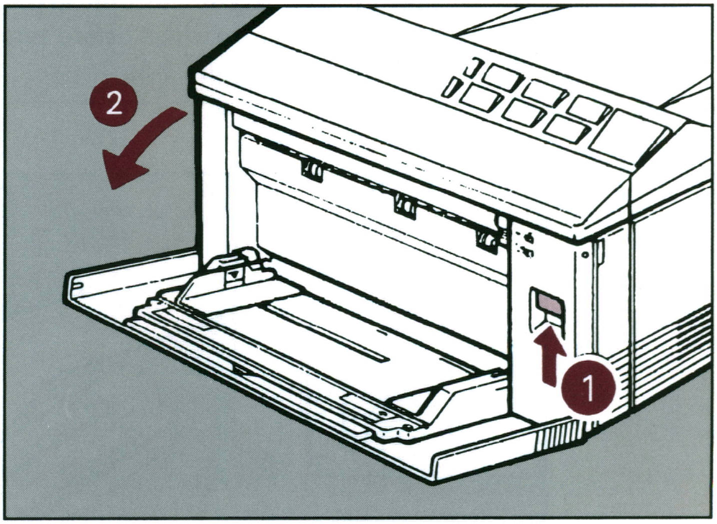


Figure 7-1. Opening the Paper Path Door

4. Grasp the old toner cartridge by the green tab and remove it from the printer.

Note It may be necessary to push the green release button to the right of the toner cartridge before removing the cartridge (see the detail in figure 7-2).

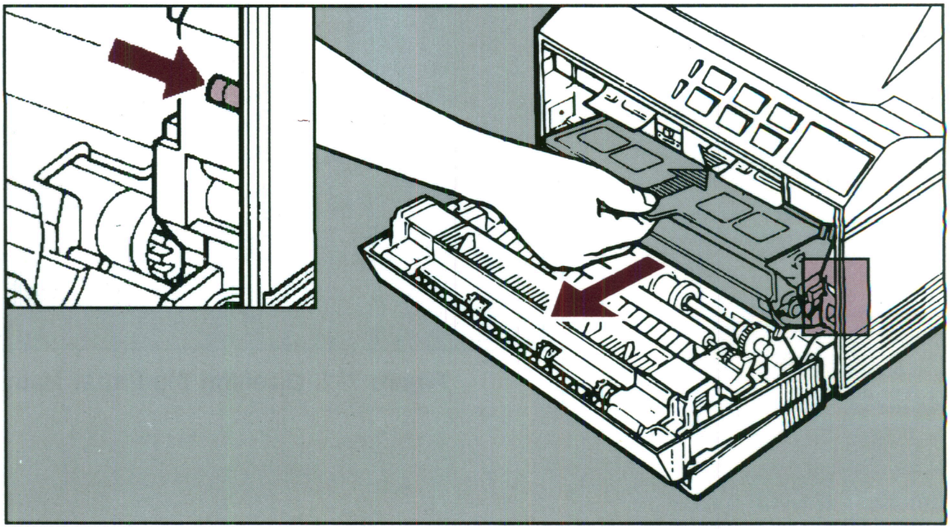


Figure 7-2. Removing the Used Cartridge

5. Remove the new toner cartridge from its box, then cut open the end of its bag. Save the packing materials for possible cartridge storage.

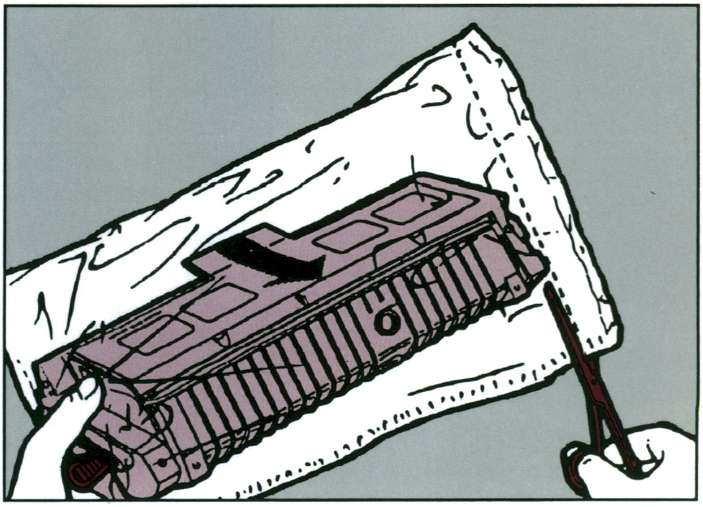


Figure 7-3. Removing the Toner Cartridge

Caution

Never expose the toner cartridge to direct sunlight. In addtion, never expose the toner cartridge to room light for more than a few minutes. Light can cause the electrophotographic drum inside the cartridge to degrade and become damaged.

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6. Slowly rock the cartridge from end to end five times to distribute the toner.

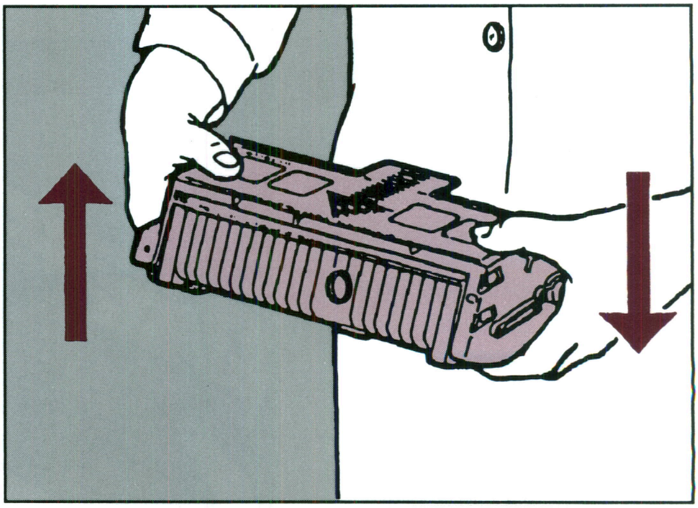


Figure 7-4. Rocking the Toner Cartridge

7. Firmly grasp the orange tab on the side of the cartridge. Pull firmly and straight out to remove the 18 inch (45.72 cm) strip of clear sealing tape. Discard the sealing tape. If the orange tab separates from the tape, pull the tape out.

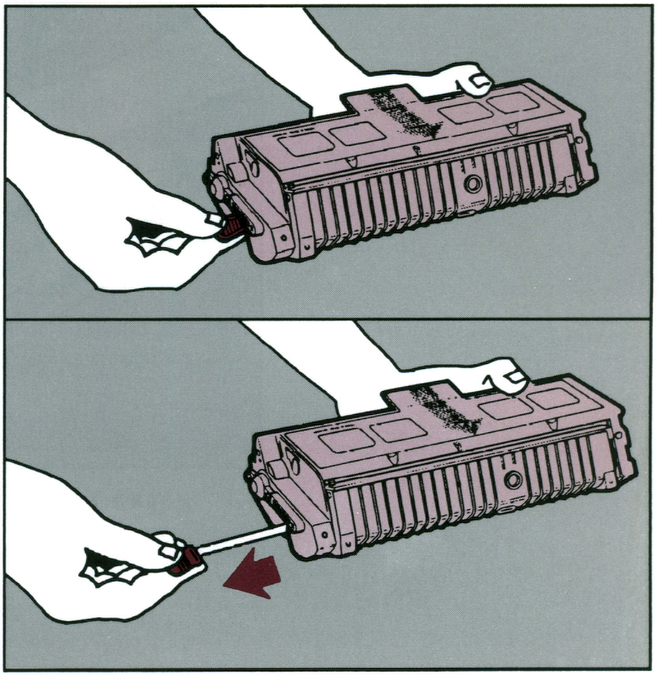


Figure 7-5. Removing the Sealing Tape

Note

If toner gets on your clothes, wipe it off with a dry cloth and wash the clothes in **cold** water. Hot water sets toner into fabric.

8. Insert the toner cartridge, aligning the green arrow (▲) on the cartridge with the green arrow (▼) centered inside the printer.

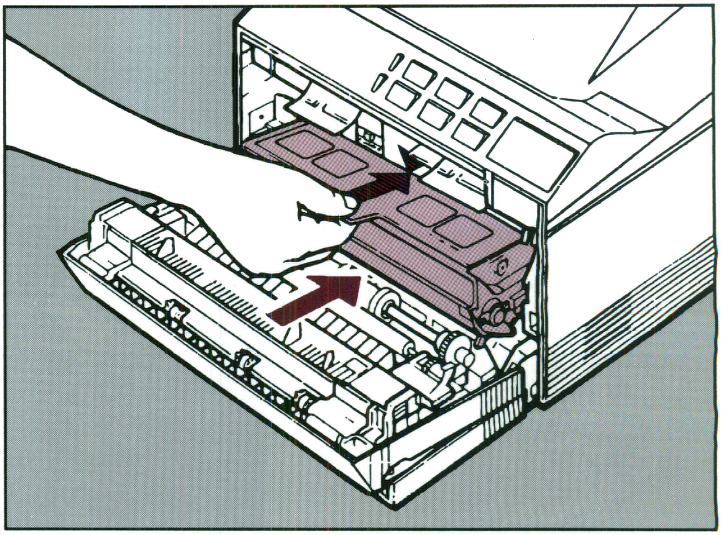


Figure 7-6. Installing the New Toner Cartridge

9. Close the paper path door, but leave the Multi-Purpose tray door open.

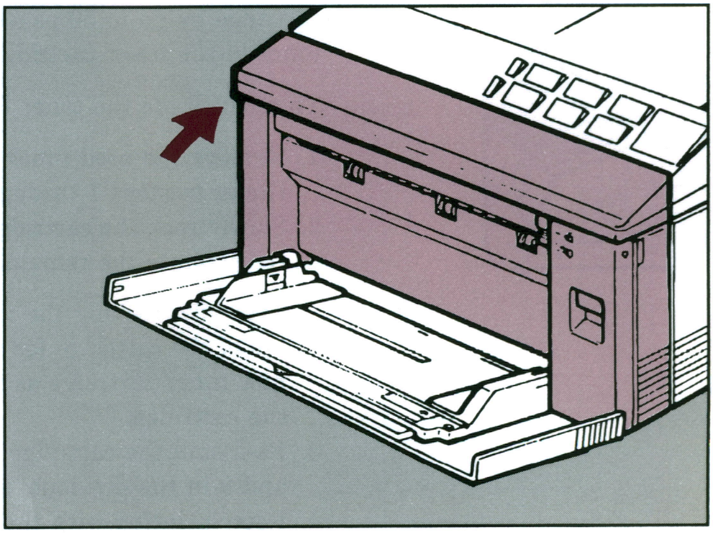


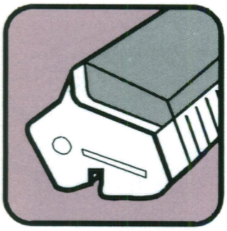
Figure 7-7. Closing the Paper Path Door

10. After installing a **new** toner cartridge you must follow the steps in the section, "Cleaning the Printer," on page 7-13.

Caution

To prevent damage to your printer, you should use the printer-generated cleaning paper to clean the inside of the printer each time you install a new toner cartridge.

Extending the Life of the Toner Cartridge



When the toner supply in the toner (EP-L) cartridge gets low, some parts of a page may exhibit light printing or no printing at all. You can often extend the life of the cartridge by up to 50 pages by redistributing the remaining toner in the toner cartridge.

To redistribute the toner follow these instructions:

1. Remove the used toner cartridge from the printer. (Refer to steps 1 through 3 in the previous section.)
2. Slowly rock the cartridge from end to end five times to redistribute the remaining toner, as shown in figure 7-4.

   Typically, rocking the toner cartridge will not extend the life of the cartridge for very long. You should order a new toner cartridge as soon as you find a need to rock the cartridge.
3. Re-install the cartridge in the printer. (Refer to steps 8 and 9 in the previous section.)
4. Retry printing with the cartridge.

If, after rocking the toner cartridge, the print quality does not improve, or if it worsens, you need to replace the cartridge. (Refer to the previous section "Replacing the Toner Cartridge.")

Cleaning the Printer

Your printer is designed to require minimum cleaning. However, at times it may be necessary to clean the inside or outside of your printer. Use the instructions in this section to help you obtain optimum print quality and maintain the appearance of your printer.

Generating the Cleaning Paper

Each time you run a Self Test from the control panel, the printer generates a page of **cleaning paper** (the second page of the Self Test printout). The best way to correct print quality problems, or frequent paper jams in the fuser area, is to clean your printer using printer-generated cleaning paper.

Note

To prevent damage to your printer, you should use the printer-generated cleaning paper to clean the internal parts of the printer each time you install a new toner cartridge.

Perform the following steps to generate a page of cleaning paper, and to use it to clean the inside of the printer:

1. Remove any accessory personality cartridge (such as the PostScript cartridge) you may have installed. (Make sure the printer is *off* before you remove the personality cartridge.)
2. If the Optional Lower Cassette is installed, make sure `TRAYS MP TRAY` is set in the Printing Menu by doing the following:
    a. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
    b. Click the MENU key repeatedly until `TRAYS` appears in the first line of the display.
    c. Click the +/— key until `MP TRAY` appears in the second line of the display.

d. Click the ENTER key to make your selection. An asterisk (*) appears in the display.
e. Click the ON LINE key to return the printer on-line.

This will ensure that paper is pulled from the Multi-Purpose tray, which is necessary for the second half of this procedure.

3. Make sure both the Printing Menu items are set for letter sized paper (`MP SIZE LETTER`, and `JOB SIZE LETTER`) by doing the following:

   a. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
   b. Click the MENU key repeatedly until `MP SIZE` appears in the first line of the display.
   c. Click the +/— key until `LETTER` appears in the second line of the display.
   d. Click the ENTER key to save your selection. An asterisk (*) appears in the display.
   e. Click the MENU key until `JOB SIZE` appears in the first line of the display.
   f. Click the +/— key until `LETTER` appears in the second line of the display.
   g. Click the ENTER key to save your selection. An asterisk (*) appears in the display.
   h. Click the ON LINE key to return the printer on-line.

4. Install letter-size paper into the Multi-Purpose tray.

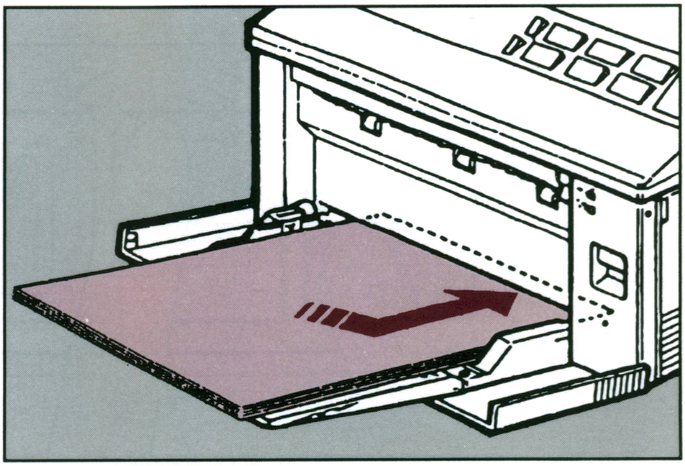


Figure 7-8. Loading Paper Into the Multi-Purpose Tray

5. If the green On-Line indicator is lit, click the ON LINE key to take the printer off-line. If the On-Line indicator is already off, go on to the next step.

6. While holding down the Alt key, click the Test key. The display will show 05 SELF TEST.

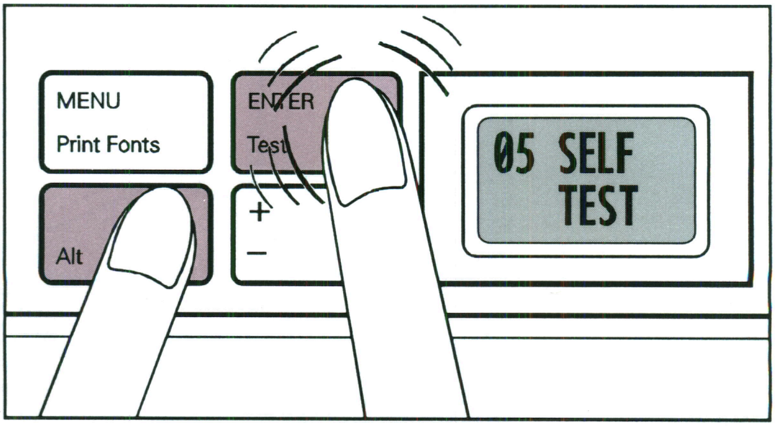

MENU
Print Fonts
ENTER
Test
Alt
+
−
05 SELF
TEST

Figure 7-9. Performing a SELF TEST

Note

If 04 SELF TEST appears, click the ON LINE key to stop the continuous self test. Up to 6 more self tests will print. 04 SELF TEST appears when you hold down the Test key for more than 5 seconds while performing a self test.

7. After about 30 seconds, `06 PRINT TEST` will appear in the display. Two pages will print. The first page is a self test printout. The second page is the cleaning paper.

   The black strip on the cleaning paper removes any built-up toner from the printer's internal parts when used as described in the following steps.

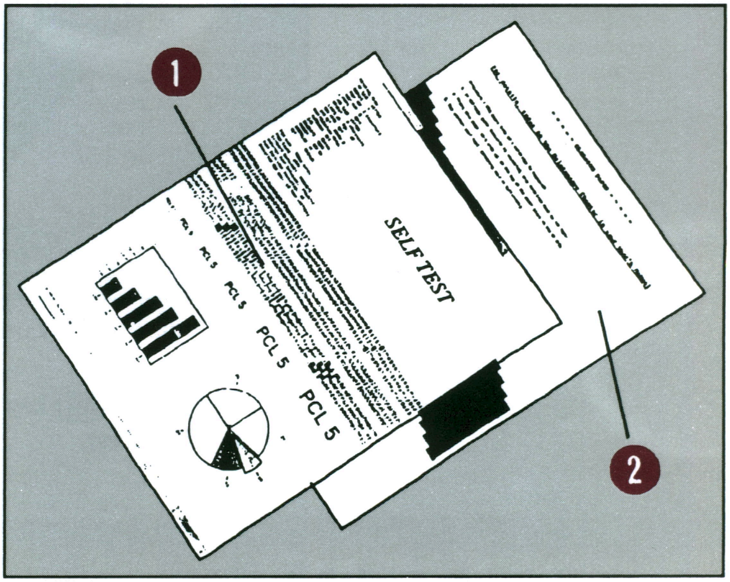


Figure 7-10. Sample Pages

1. Self test paper
2. Cleaning paper

8. Place the cleaning paper *face-up* in the Multi-Purpose tray on top of the paper stack.

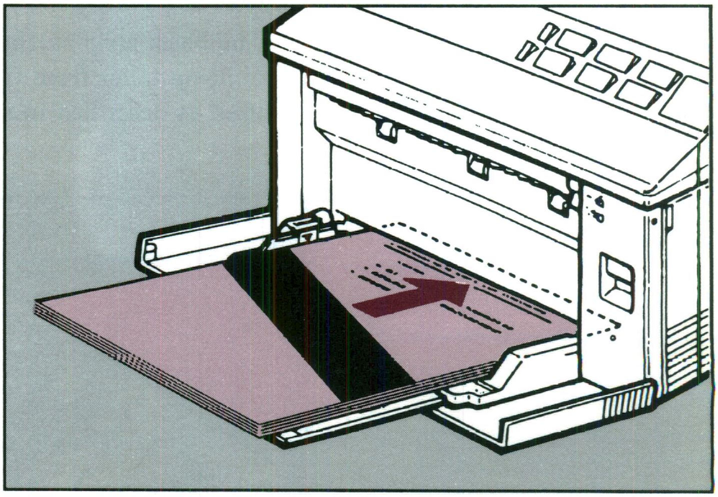


Figure 7-11. Loading the Cleaning Paper

9. Hold down the Alt key and click the Test key to run another Self Test.

Two pages will print out. The first page will have print on both sides, as shown in figure 7-12. The second page will be a new sheet of cleaning paper.

If the first page dow not have print on both sides, you loaded the cleaning paper incorrectly. Repeat step 8.

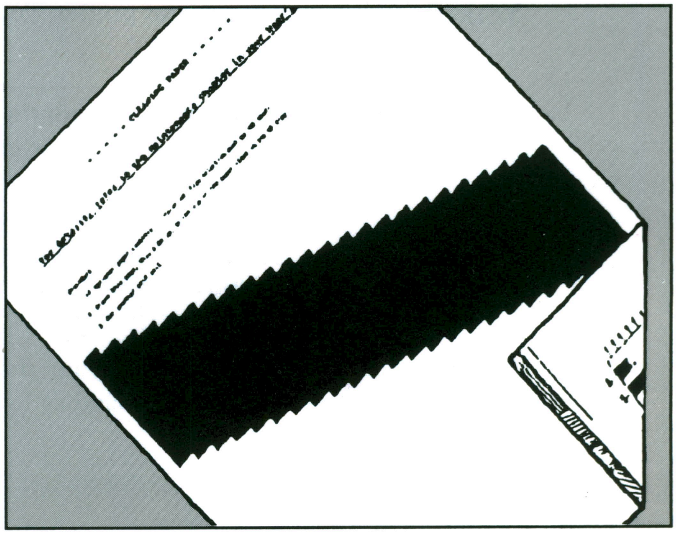


Figure 7-12. Correctly Used Cleaning Paper

10. You have now cleaned the paper path inside your printer. Discard all the self test pages printed.

Note

You may need to reset your Printing Menu `MP SIZE`, `TRAYS`, and `JOB SIZE` items to match the media you were using. Reinstall any personality cartridge you might have removed in step 1.

Cleaning the Inside of Your Printer

If the toner cartridge has leaked, or toner has gathered on the inside of printer, you will need to clean the inside of the printer.

Warning

- **Remove the printer's power cord from the power outlet before cleaning, or injury may result.**
- **Never use sharp objects when cleaning *your printer!***
- **Never use cleaning solutions to clean the inside of your printer! To prevent printer damage, use only a dry lint-free cloth.**

Note

If toner gets on your clothes, wipe it off with a dry cloth and wash the clothes in **cold** water. Hot water sets toner into fabric.

1. Look inside the printer for toner. Figure 7-13 highlights places where toner may collect.

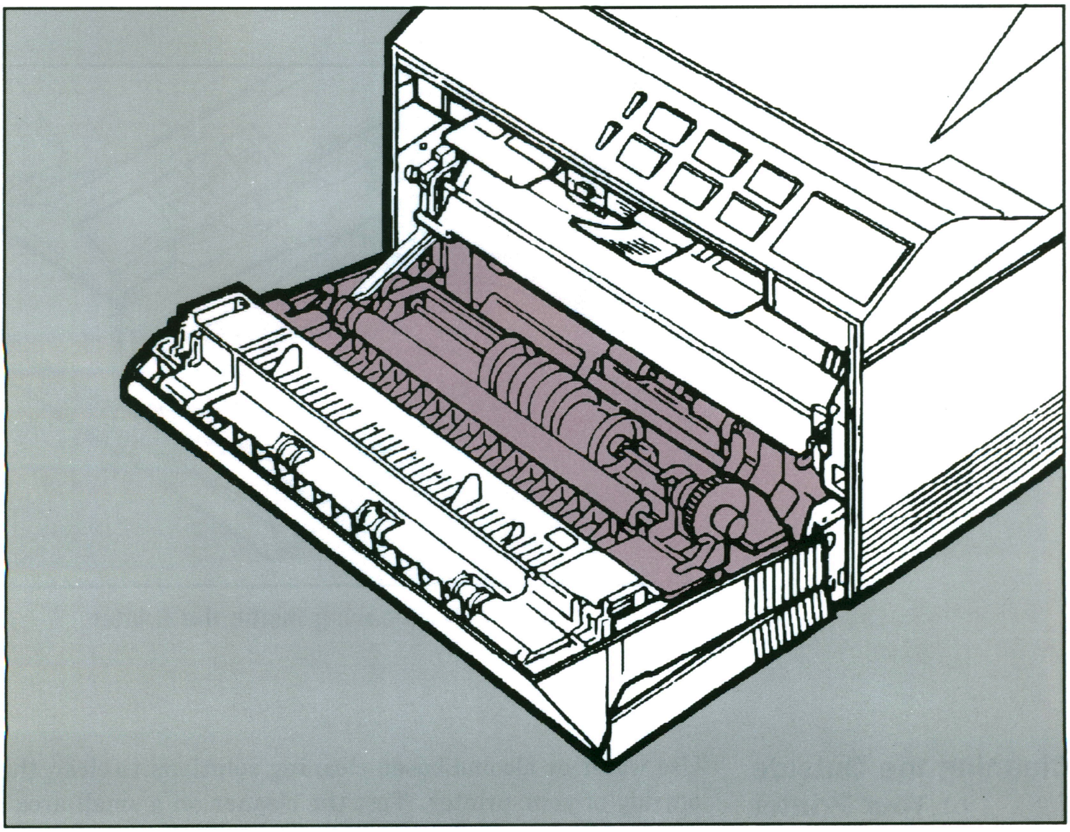


Figure 7-13. Locating Toner

2. Wipe away any visible toner, using a dry lint-free cloth. Do not remove the toner cartridge. Be careful not to bend any of the plastic paper guides circled in figure 7-14.

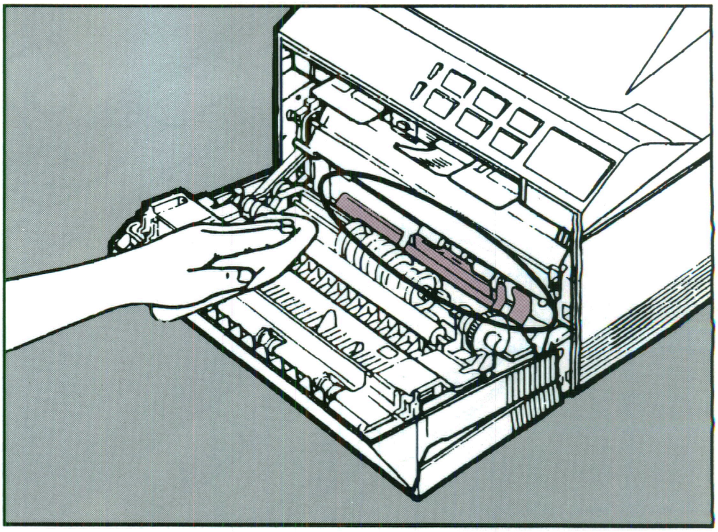


Figure 7-14. Cleaning Inside the Printer

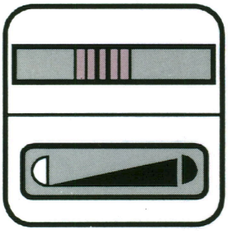
Cleaning the Outside of Your Printer

Use water or alcohol-based cleaning solutions to clean the outside of your printer. Test the cleaner on a small area of your printer to check its cleaning performance.

Caution

- Do not use any other chemical-based cleaning solutions, such as ammonia. The printer's covers and internal components can be permanently damaged by some chemicals and fumes.
- Never spray cleaning solutions directly onto the printer. Always spray the cleaning solution onto a cloth, and then wipe your printer with the cloth.

Adjusting Print Density



Print density defines the darkness (or lightness) of the print on a page. Dense print appears heavier and thicker, while less dense print appears lighter and thinner.

The printer uses the toner contained in the toner cartridge faster if you move the print density slide to the right to obtain very dense print.

Note

Adjustments to the print density may require adjusting the Resolution Enhancement level setting for optimal print quality. Refer to the following section for more information about Resolution Enhancement adjustments.

To adjust print density, perform the following steps:

1. Pull down on the Multi-Purpose (MP) tray to open it.

Note

If the Multi-Purpose tray is already open and has paper in it, remove the paper before proceeding.

2. Push the release button upward ① on the right side to open the paper path door ②.

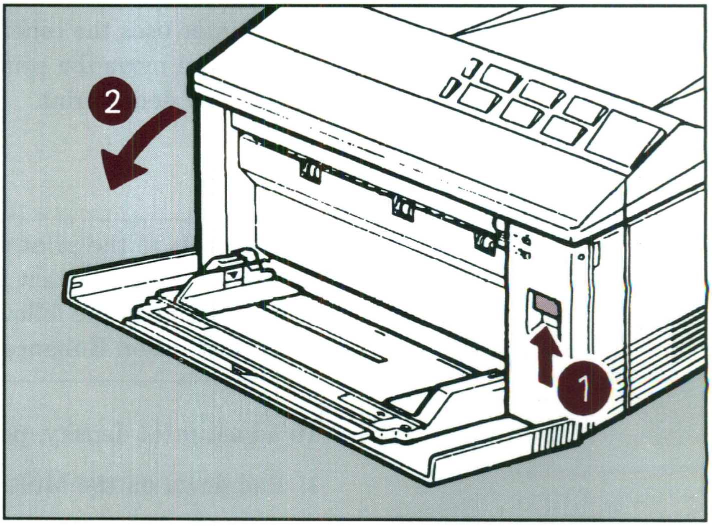


Figure 7-15. Opening the Paper Path Door

3. Move the print density slide (detailed in figure 7-16) to the right for darker print, or to the left for lighter print. The recommended setting is in the middle (you can feel a slight notch at this position).

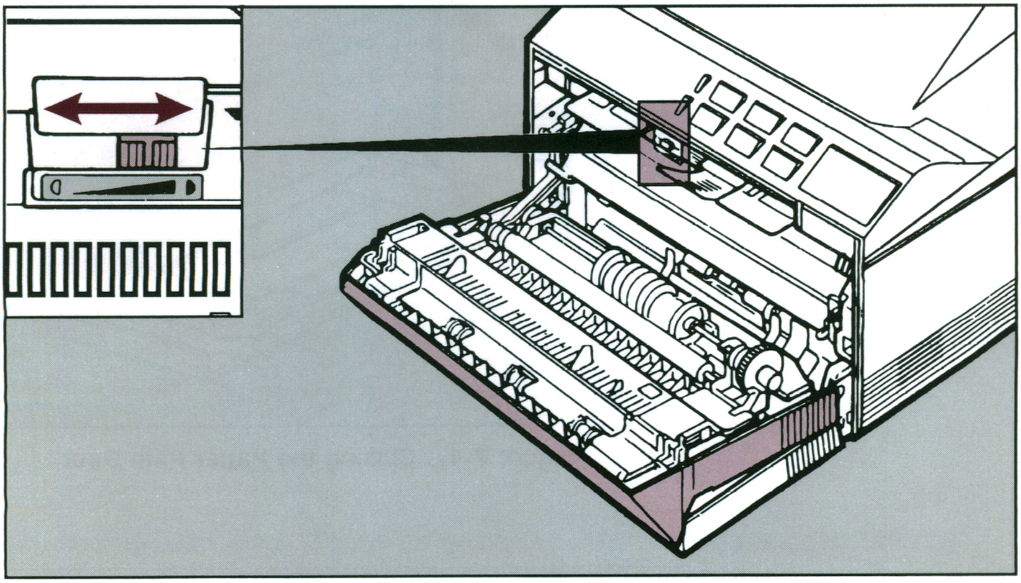


Figure 7-16. Adjusting Print Density

4. Close the paper path door, making sure it latches.

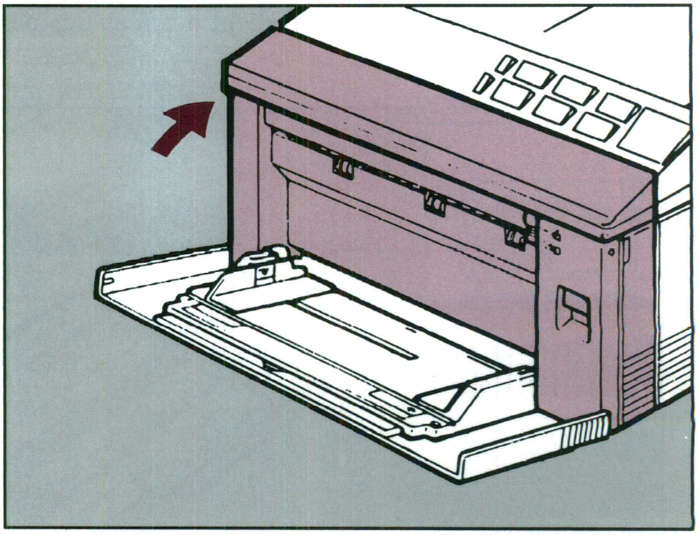


Figure 7-17. Closing the Paper Path Door

Note It may take up to 3 pages for the new density setting to stabilize.

Optimizing Print Quality with Resolution Enhancement

Your HP LaserJet IIIP printer contains **Resolution Enhancement technology** (RET), which improves the quality of 300 dpi (dots per inch) printing. This section describes how you can adjust the RET settings on the control panel and the print density slide to "fine tune" the print quality of your output.

You will find these adjustments to be especially useful for preparing originals for reproduction, whether you photocopy HP LaserJet IIIP printer output or send "camera-ready" work to a commercial print shop.

This section describes three steps:

1. Printing comparison self tests.
2. Selecting an optimum RET setting.
3. Fine tuning with the print density slide.

Note

Some specialized applications, such as photographic reproductions, may yield better results with Resolution Enhancement turned off (`RET OFF`).

STEP 1 - Printing Comparison Self Tests

Follow these instructions to print a self test at each of the three RET settings (light, medium, and dark):

1. Set the print density slide in the middle. (See the previous section.)
2. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.
3. Click the MENU key until `ORIENT` appears in the first line of the display.
4. Click the +/- key until `ORIENT P` appears.
5. Click the ENTER key to save the portrait selection. An asterisk (*) appears.
6. Click the MENU key several times until `DEVICE CONFIG` appears.
7. Click the ENTER key. `AUTOCONT` should appear in the first line of the display.
8. Click the MENU key until `RET` appears in the first line of the display.
9. Click the +/- key until `RET LIGHT` appears.
10. Click ENTER to save your selection. An asterisk (*) appears.
11. Click ON LINE twice: once to exit the menu and the second time to take the printer off-line again.
12. Hold down the Alt key and click the Test key. `05 SELF TEST` should appear. Wait until 2 pages print. Discard the Cleaning Paper page.
13. Repeat instructions 6 through 12 for the MEDIUM and DARK RET settings.

You should now have three self test printouts.

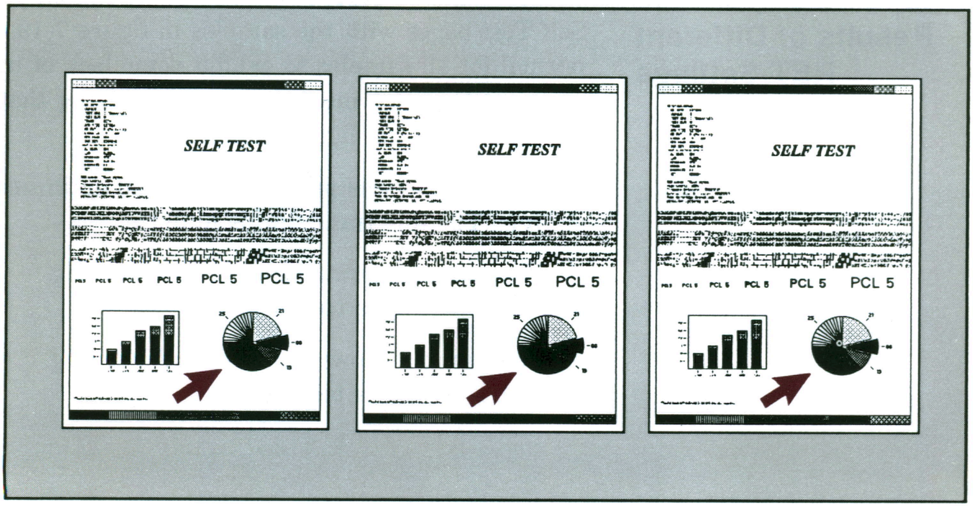

SELF TEST
PCL 5
PCL 5
SELF TEST
PCL 5
PCL 5
SELF TEST
PCL 5
PCL 5

Figure 7-18.
Location of the 33 Percent Pie Slice on the Self Test Page

Examine the 33 percent slice of the pie chart at the bottom of each Self Test printout. Using the guidelines on the next page, compare these test pages to determine which RET setting produced the highest quality print image.

STEP 2 - Compare the Results of Different RET Settings

Compare the 33 percent pie chart sections on your three Self Test pages with the samples in figure 7-19. (It is normal for all samples to exhibit some lack of uniformity.) Then set the RET menu item to the setting that best minimizes vertical light or dark stripes.

① This sample was produced with the optimum RET setting. The line transition is uniform.

② This sample shows dark vertical banding. The RET setting is too dark.

③ This sample shows light vertical banding. The RET setting is too light.

Once you have determined the best RET setting to use, perform steps 6-13 on page 7-28 to change the RET setting on your printer's control panel:

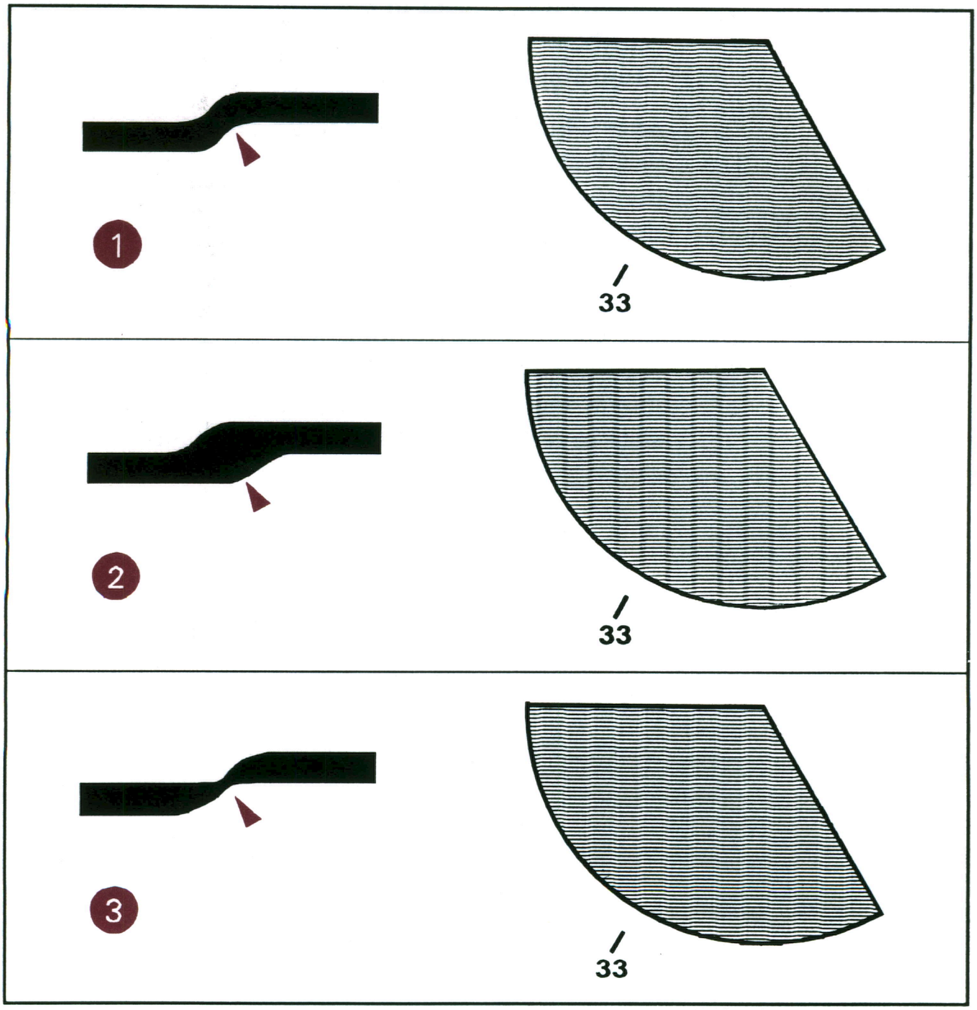


Figure 7-19. Comparison of RET Setting Adjustments

STEP 3 - Fine Tuning with the Density Control Slide

RET may be further optimized by adjusting the print density control slide. If dark vertical banding was evident in the sample selected, adjust your print density control slide to a lower setting (to the left). If light vertical banding was evident in the sample, then adjust your print density control slide to a higher setting (to the right). (See "Adjusting Print Density" earlier in this chapter.)

After adjusting the print density control slide, run another Self Test printout and again examine the 33 percent slice of the pie chart. For RET to be fully optimized, the shading of the 33 percent slice should have no light or dark vertical banding (see figure 7-19).

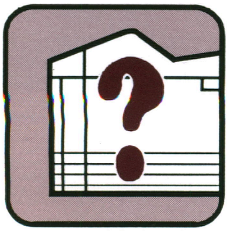
Note

The optimum RET settings for your printer may vary slightly over time. Usually the adjustment required is minor, requiring only an adjustment of the density control slide to restore optimum RET performance.

8

Solving Printer Problems

Topics Covered in this Chapter



This chapter can help you diagnose and solve problems with your printer.

This chapter includes information about:

- Understanding printer display messages.
- Problem solving.
- Preventing paper jams.
- Clearing paper jams.
- Preventing multiple feeds.
- Troubleshooting font problems.
- Troubleshooting manual feed problems.
- Solving some print quality problems.
- Solving typical envelope problems.
- Commonly asked questions.

Printer Display Messages

The printer communicates with you by showing messages in the display. If you are having problems with your printer, monitor these messages carefully.

Note

If your control panel `AUTOCONT` setting is set to `ON`, then some error and service messages will only appear for a few seconds. When troubleshooting a printing problem, we recommend you set `AUTOCONT` to `OFF`.

Table 8-1. Printer Messages

Message	Description	Recommended Response
00 READY	The printer is ready to use. This message may be accompanied by the Multi-Purpose tray size setting or an empty tray advisory message.	Normal condition.
02 WARM UP	Printer is warming up.	If the message persists for more than 2 to 3 minutes, service is required.
04 SELF TEST	Continuous self test is in process.	Click the ON LINE key to exit the continuous self test mode. Up to 6 self test pages will continue to print until the printer's memory buffer is empty.
05 SELF TEST	The non-printing portion of the self test is in process.	Proceed by clicking the ON LINE key, if necessary, after `00 READY` is displayed.
06 FONT PRINTOUT	Font sample printout is printing.	Proceed by clicking the ON LINE key, if necessary, after `00 READY` is displayed.
06 PRINT TEST	Self test is printing.	Proceed by clicking the ON LINE key, if necessary, after `00 READY` is displayed.
07 RESET	The printer is clearing buffered pages, temporary soft fonts and temporary macros. (This returns all internal printer settings back to the user-selected control panel Printing Menu settings.)	Proceed after `00 READY` is displayed.

Table 8-1. Printer Messages (continued)

Message	Description	Recommended Response
09 MENU RESET	The printer is clearing buffered pages, temporary soft fonts and temporary macros. (This returns all Printing Menu settings back to the factory default settings.)	Proceed after `00 READY` is displayed.
10 RESET TO SAVE	This reminder appears when changes to the Printing Menu have been made, and data, temporary fonts, or temporary macros are present in the printer's memory.	Hold down the Alt key and click the Reset key to activate changes to the Printing Menu (data in the printer's memory will be lost). Or click the ON LINE key (Printing Menu changes will not take effect until the next `RESET`).
12 OPEN OR NO EP	The printer is not closed properly, the toner cartridge is missing, or the cooling fan is not working.	Securely close the paper path door and the fuser access door. Insert a toner cartridge if it is missing. Check in the fuser for jammed paper which may be holding the fuser door slightly open. If you are unable to clear this message, service is required.
13 PAPER JAM	The printer senses a paper jam.	Refer to "Clearing Jams" later in this chapter to remove the jammed paper. Make sure you open and close the paper path door. Click the ON LINE key to resume printing. If you are unable to clear this message, service is required.
17 MEM CONFIG	The printer is reconfiguring its memory for page protection.	Proceed after `00 READY` is displayed.

Table 8-1. Printer Messages (continued)

Message	Description	Recommended Response
20 MEM OVERFLOW	The printer's memory has received more data from the computer than can be stored. Data loss has occurred.	Reduce soft fonts and other data stored in the printer's memory buffer. Lower the resolution (DPI) of graphics sent to the printer. Hold down the Alt key and click the Continue key to eject the page and return the printer on-line. Additional printer expansion memory may be required.
21 PRINT OVERRUN	The printer received too much, or too complex data (rules, raster graphics, or dense text); some data loss may occur.	Simplify your page layout or purchase additional memory and set the Page Protection menu item. Hold down the Alt key and click the Continue key to resume printing.
22 ERROR	The printer's receiving buffer has overflowed during a busy state. Your software application is ignoring the printer's busy state.	Verify that the printer and the computer's software are set up to communicate correctly. Hold down the Alt key and click the Continue key to resume printing. Check to make sure you have the proper printer interface cable. Call for service if error persists.
40 ERROR	A serial interface configuration error has been detected. This error can occur when you turn off your computer while the printer is on-line, or if the baud rate of the computer does not match the baud rate of the printer.	Make sure the proper interface *and* cable are securely installed. Check your computer's `AUTOEXEC.BAT` file, and make sure it matches the printer's configuration (this step applies if you are using the serial interface). Call for service if the error persists.

Table 8-1. Printer Messages (continued)

Message	Description	Recommended Response
41 ERROR	A temporary error occurred while printing. The last printout may be missing text or be incomplete.	Hold down the Alt key and click the Continue key to resume printing. If the error persists, service is required.
50 NEEDS SERVICE	There is a fusing assembly malfunction.	Attempt to clear the error by turning **OFF** the printer for at least 10 to 15 minutes. If the error persists, service is required.
51 ERROR	There is a beam detection malfunction.	Hold down the Alt key and click the Continue key to resume printing. If the error persists, service is required.
52 ERROR	There is a scanner malfunction.	Hold down the Alt key and click the Continue key to resume printing. If the error persists, service is required.
53 ERROR **or** **53 ERROR UNIT X**	There is a specific memory unit error. The number 1 represents the top memory unit installed and 2 is the bottom. The memory board may have been installed incorrectly.	Try to isolate the problem by swapping out memory boards. Refer to appendix F for more information on troubleshooting printer memory. If the error persists, call for service.
55 ERROR	There is an internal printer error.	Hold down the Alt key and click the Continue key to resume printing. If the error persists, service is required.

Table 8-1. Printer Messages (continued)

Message	Description	Recommended Response
57 ERROR UNIT X	The printer's memory expansion limits have been exceeded. The number 1 represents the top memory unit installed and 2 the bottom. The maximum expansion memory this printer can recognize is a combination of memory units equaling 4 Mbytes.	Hold down the Alt key and click the Continue key to resume printing. Any excess memory will be ignored.
61 through 67 NEEDS SERVICE	There is an internal printer error.	Turn the printer **OFF** and then back **ON**. If the error persists, service is required.
68 ERROR	An error in the memory used to store the control panel selections has occured. All or part of the user's default settings are set back to the factory default settings. If the error persists, service is required.	Verify Printing and Configuration Menu settings and Hold down the Alt key and click the Continue key to resume printing.
68 NEEDS SERVICE	An error in the memory used to store control panel selections has occured. All of the printer's user default settings are returned to the factory default settings. The printer will require service.	Hold down the Alt key and click the Continue key to resume printing. You must re-select Printing and Configuration Menu settings, but they will be lost once the printer is turned **OFF**. The message `68 READY` is displayed to remind you that service is required.

Table 8-1. Printer Messages (continued)

Message	Description	Recommended Response
70 ERROR	The firmware cartridge you installed is not working properly with this printer.	Verify that the firmware cartridge was specifically designed to work with this printer. If it was not, turn **OFF** the printer and remove the cartridge. If it was, turn the printer **OFF** and back **ON**. If the error persists, discontinue using this firmware cartridge.
71 ERROR	The firmware cartridge you installed is not designed to work with this printer.	Turn the printer **OFF** and remove the firmware cartridge. Discontinue the use of this firmware cartridge.
72 NEEDS SERVICE	A font cartridge is removed from the printer while the printer was accessing it, or the printer's cartridge connector is damaged.	Turn the printer **OFF**, install the correct font cartridge, and turn the printer back **ON**. Try installing a different cartridge. If this error persists, service is required. If the problem stays with a particular cartridge, discontinue its use.
79 - XXXX SERVICE	An internal printer error is detected. A four digit code will be displayed at XXXX. This message may indicate a compatibility problem with personality cartridges and printer memory.	Turn the printer **OFF**, then back **ON**. If the message reappears, remove all accessories (such as additional printer memory) and try to print again. If the error persists, record the number shown on the display, and call for service.

Table 8-1. Printer Messages (continued)

Message	Description	Recommended Response
A blank display	A blank display indicates a problem with external power or internal printer components.	Check the power cord and outlet. Turn the printer **OFF**, wait 10 to 15 minutes, then turn it back **ON**. If the display remains blank, service is required.
CONFIG LANGUAGE	The printer was powered on while holding down the ENTER key, allowing the selection of a local language for the display.	Wait until `LANGUAGE ENGLISH` appears. Then select the display language by clicking the +/— key until the language you want to use appears in the first line of the display. Click the ENTER key to make your selection and press the ON LINE key to return the printer on-line.
FC REMOVED	The font cartridge was removed while the printer was off-line and the printer still contains buffered print data.	Re-insert the original cartridge and click the ON LINE key to return the printer to the on-line status. If the same cartridge is not re-installed, the printer displays `FC REMOVED` until the printer is turned off.
FE CARTRIDGE	The font cartridge was removed while the printer was on-line. This error occurs whether or not the cartridge was being accessed.	To clear the error, turn the printer **OFF**, then back **ON**.
LANGUAGE ENGLISH	No display language is selected.	Click the +/- key to choose a language. Click the ENTER key to save the language. Then click the ON LINE key to put the printer back on-line.

Table 8-1. Printer Messages (continued)

Message	Description	Recommended Response
ME FEED	The printer has been configured or has received a command from the computer for manual envelope feed. The envelope size may be: COM10, MONARCH, DL, or C5.	Load the correct envelope into the Multi-Purpose tray, and click the ON LINE key.
MF FEED	The printer has been configured for manual feed, or it has received a command to manually feed a sheet of paper from the computer. The paper size may be: A4, EXEC, LETTER, or LEGAL.	Load the correct paper into the Multi-Purpose tray, and click the ON LINE key.
MF READY	The printer is configured for manual feed and ready to use.	Normal condition when the printer is configured for manual feed mode.
MP LOAD, **LC LOAD,** **LE LOAD**	The selected tray (Multi-Purpose, Lower Cassette, or Lower Envelope) is either empty or does not contain the correct size paper or other print media. This also occurs when the `JOB SIZE` setting does not match the `MP SIZE` setting.	Load the correct paper into the selected MP, LC, or LE tray. The `MP SIZE` or `LE TRAY` menu items must be set to match media size given in the message. Refer to chapter 2. Click the Continue key if you want to print the image on the media in the specified tray, regardless of its size.

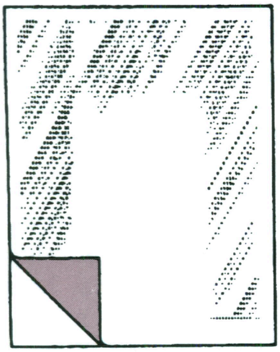
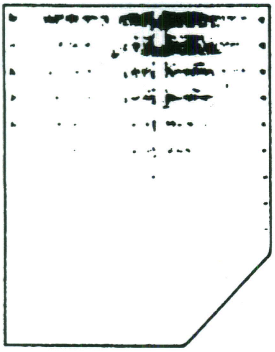
Table 8-1. Printer Messages (continued)

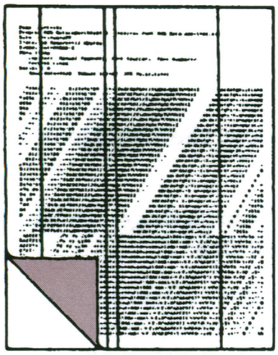
Message	Description	Recommended Response
MP EMPTY, **LC EMPTY,** **LE EMPTY**	The paper tray (Multi-Purpose, Lower Cassette, or Lower Envelope) is empty and is *not* the selected paper tray.	This message does not require paper to be loaded. It is only a reminder that there is no paper in the MP, LC, or LE tray.
LE TRAY	An Optional Lower Cassette envelope tray has been installed. The second line of the diplsay inidcates the current envelope size selection.	Use the +/− keys to select the actual size of the envelopes installed in the Optional Lower Cassette envelope tray and press ON LINE to continue. Otherwise, the printer will use the previously selected envelope size setting. Refer to "Responding to the Control Panel Display" on page 4-20 for more information.

Solving Print Quality Problems

This section includes several print quality problems, and describes possible solutions for the problems.

If the problem is accompanied by a message in the display window, refer instead to table 8-1, "Printer Messages" at the beginning of this chapter.

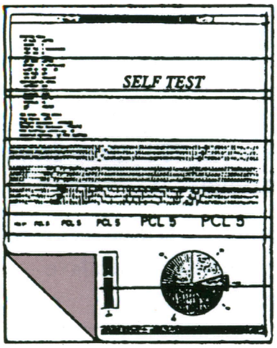
	**Faded Print** Faded print can be a faded area or faded block of vertically aligned white streaks. ■ The toner cartridge may be getting low on toner. See "Extending the Life of the Toner Cartridge" on page 7-12. ■ The paper may not meet the guidelines in appendix E. For example, the paper may be excessively moist.
	**Staining** Stains usually appear as small, round, black dots that occur on the front or the back of a page. Sometimes wide, inconsistent stains appear. ■ Your paper may not meet the media guidelines required for the printer. See appendix E, "Selecting Paper and Other Print Media." ■ You may be printing on the wrong side of the paper. Remove the input paper stack and turn it over. ■ The fuser roller may need cleaning. See "Cleaning the Printer" on page 7-13. ■ Toner may have accumulated inside the printer. See "Cleaning the Inside of Your Printer" on page 7-20. ■ The toner cartridge may be damaged. You may need to replace it if maintenance procedures do not improve print quality.



Vertical Lines

Sometimes vertically aligned black streaks or smears can appear on successive pages.

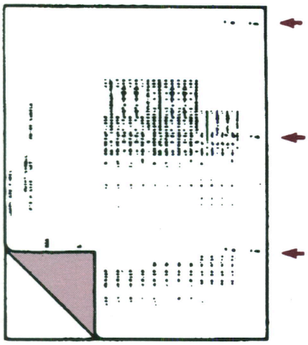
- The toner cartridge may be damaged. You may need to replace the toner cartridge.
- Clean the fuser area following the instructions in "Cleaning the Inside of Your Printer" on page 7-13.



Horizontal Stripes

Sometimes horizontally aligned black streaks or smears can appear.

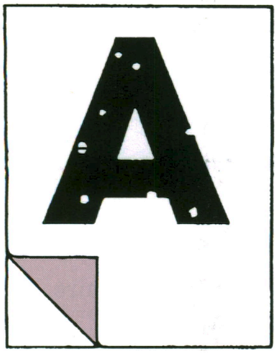
- The toner cartridge may not be seated properly. Remove the cartridge and re-insert it.
- The toner cartridge may be defective, and need replacing.
- If you still have problems the printer may require servicing. See chapter 9, "Service and Support."



Repetitive Defects

Sometimes light character shadows or repetitive marks appear on the page.

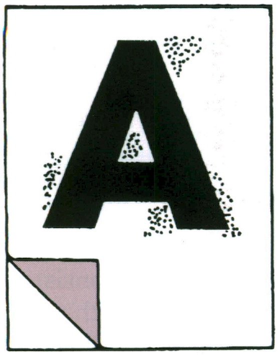
- The paper path may be dirty. Follow the directions in "Cleaning the Printer" on page 7-13.
- Use a different type of overhead transparency. Refer to appendix E, "Print Media Specifications".
- Your paper texture may be too coarse. If these flaws occur 2.36 inches (60mm) apart from each other, and only on the top lines of the page, change to a lighter weight paper with a smoother finish or try moving the print down on the page (do not try to print in the top $\frac{2}{5}$ inch (10 mm) of the page). See "Selecting Paper and Other Print Media" in appendix E.
- The toner cartridge may be damaged, causing a repetitive black flaw on every printout. These flaws occur $1\frac{1}{2}$ inches (38 mm) or $3\frac{7}{10}$ inches (94 mm) from each other. Replace the toner cartridge.
- The photosensitive drum of the toner cartridge may have been over-exposed to bright light, causing repetitive defects. Replace the toner cartridge.



Character Voids

Character voids are white areas within the parts of characters that should be solid black.

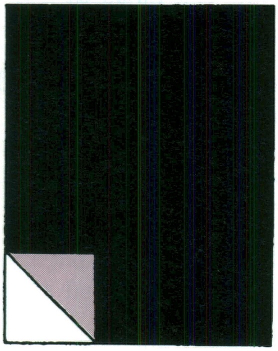
- If you are using transparencies when you experience this problem, you may need to try another type. Hewlett-Packard overhead transparencies have been designed to minimize this problem. See appendix E, "Selecting Paper and Other Print Media."
- You may be printing on the wrong side of the page. Remove the paper from the input paper tray and turn over the paper.
- Your paper may not meet the guidelines required for the printer. See appendix E, "Selecting Paper and Other Print Media".



Background Scatter

Background scatter results from bits of toner distributed on the front or back of a printed page. Background scatter is often isolated to a specific area of the page.

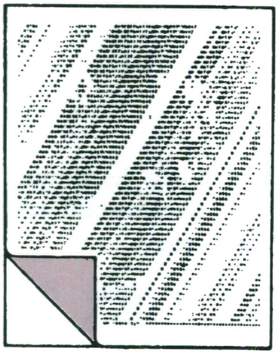
- Change the paper type, weight or surface finish. See appendix E, "Selecting Paper and Other Print Media".
- If background scatter occurs on an envelope, try moving the text to an area where there are no seams. Printing on seams can cause this problem.
- If background scatter covers the entire surface of an envelope, try adjusting the print density slide. See "Adjusting Print Density" on page 7-23.
- If this problem occurs on the back of a printed page, it may be caused by a toner buildup on the separation pad or rollers inside the printer. See "Cleaning the Printer" on page 7-13.



Black Page

A black page is a page that is completely black.

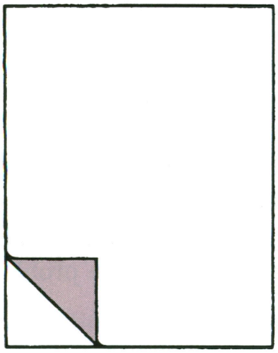
- The toner cartridge may not be seated properly. Remove the cartridge and re-insert it.
- The toner cartridge may be defective, and need replacing.
- If you still have problems the printer may require servicing. See chapter 9, "Service and Support."



Dropouts

Dropouts are characters that are partially printed or not printed at all.

- A single sheet of paper may be defective. Try reprinting the job.
- Try adjusting the print density slide. See "Adjusting Print Density" on page 7-23.
- The moisture content of the paper may be inconsistent or the paper may have moist or wet spots on the surface. Try paper from a different paper manufacturer.
- The paper may have been damaged by inconsistent manufacturing processes that can cause some areas of the paper to reject toner. Try paper from a different source.



Blank Page

A blank page is a page that is completely white. If you get *occasional* blank pages:

- Make sure your page length is set correctly for the paper size you are using.
- Some sharing devices on networks may generate a blank page as a separator.
- Your printer may be feeding two or more pages at once because the paper is difficult to separate. Remove the paper from the paper tray, fan the edges of the paper to separate the pages, and re-insert the paper in the tray.
- Your software application may be sending an extra page eject command. Check your software's printing configuration information. If you are using a word-processing program, check for a natural page break and a forced page break that are so close to each other that they produce a blank page.
- If the blank pages are accompanied by data loss, your printer may need service. See chapter 9, "Service and Support."

If *all* you get are blank pages:

- Make sure you have removed the entire length of the sealing tape from the toner cartridge before you installed the cartridge.
- The toner cartridge may be completely out of toner. Replace the cartridge.
- If all you get is blank pages, the printer is not working correctly. Service is required. See chapter 9, "Service and Support."

Problem Solving Checklist

Printing problems come from one of three areas:

- Application software.
- Computer hardware.
- Printer hardware.

Follow the troubleshooting steps in this section to identify the source of the problem and to learn about possible solutions. Starting with question 1, answer **YES** or **NO** to each question to narrow the possible causes of the problem.

1. Is there any message on the control panel display?

YES - Go to question 2.

NO - Check the following:

a. Is the power cord plugged into both the power outlet and the printer?

b. Turn off the printer for 10-15 minutes, then turn it back on.

c. Is the printer's power switch in the **ON** position?

d. Is the power outlet working?

e. Does the line voltage from the power outlet match the printer's correct power requirements?

(Model 33481A - 90V to 126.5V)
(Model 33481AB - 198V to 264V)

2. Is there a READY message on the display?

YES - Go to question 3.

NO - Check the following:

a. Is the display language set to English?

b. Is there another message on the display? If so check the tables at the front of this chapter and perform the recommended response. If you are using a personality cartridge, such as the PostScript personality cartridge, refer to the documentation shipped with the cartridge for message explanations.

c. If the display message is not found in the Printer Messages tables, your printer requires service (see chapter 9).

3. Can your printer print a self test?

YES - Go to question 4.

NO - Check the following:

a. Is the printer off-line before you try to perform a self test?

b. Does either the Multi-Purpose tray or the Optional Lower Cassette tray contain paper of the correct size matching the selected control panel `JOB SIZE`?

c. Is the Optional Lower Cassette tray installed properly?

d. Is the printer paper path door closed securely?

e. Is there a paper jam? If **yes**, go on to "Clearing Jams" in this chapter.

f. Is there a message appearing on the display? If **yes**, see "Printer Messages," in this chapter. If no message is displayed, and the self test still will not print, you should call for support assistance. See "Assistance from HP Hardware Support" on the inside front cover of this manual.

4. Can you send print data to the printer from your computer? (Type `DIR>PRN` from your DOS prompt to print a list of the directory. While the printer is receiving data, the receiving data icon in the lower-right corner of the display flashes, and the form-feed indicator lights up. Click the ON LINE key to take the printer off line. The green On-Line indicator should be off. Then click the FORM FEED key to print the stored data. Click the ON LINE key to return the printer on-line.

YES - Go to question 5.

NO - Check the following:

a. Is there a message (other than `READY`) on the control panel display? Check the Printer Messages (table 8-1) earlier in this chapter.

b. Is the printer on-line before you send the data? The green On-Line indicator should be lit.

c. Are you using the correct interface cable, is it undamaged, and is it connected securely at both ends? See appendix D for more information. The Centronics Parallel interface cable must be "rocked" into the printer's Parallel port to ensure a secure connection.

d. Are you using a Hewlett-Packard cable, or one of comparable quality?

e. Is the interface configuration correct (both the Configuration Menu items and the DOS MODE statement)? See *HP LaserJet IIIP Printer Getting Started Guide* for more information.

f. Perform a self test. Does the interface configuration shown on a self test printout match the configuration of your computer? If you are using the serial interface, is the **baud rate** (transmission speed) of both the printer and the computer set at the same value? (See *HP LaserJet IIIP Printer Getting Started Guide* to reconfigure.)

g. Is the computer working properly? Try to display your DOS directory on your screen. (Type `DIR` at your DOS prompt.)

h. Is the computer's interface port working properly? If available, try replacing the printer interface cable, then the port used, then printer with another peripheral.

i. If the printer is not connected directly to the printer (in other words it is shared through a network or by a printer sharing device, try connecting the printer directly to your computer and see if the problem persists.

j. If you still can not identify the problem, see "Calling for Help" in chapter 9.

5. Do your control panel settings work as expected?

YES - Go on to question 6.

NO - Check the following:

a. Is your software application overriding your control panel selections? Applications allow you to make printer selections. The selections you make using a software application override the selections made using your printer's control panel until the printer is reset. Sometimes these application overrides can be invisible to the user.

b. Is the printer off-line when you attempt to change printer settings from the control panel?

c. Are you using the control panel keys correctly? See chapter 2, "Using the Printer Control Panel."

Try changing the control panel settings again. If `10 RESET TO SAVE` is displayed, save your changes by holding down the **Alt** key, and clicking the **Reset** key. (This will save your selections, but will also clear data in the printer's buffer, including temporary fonts and macros.)

6. Is your printer printing all the data being sent to it?

YES - Go on to question 7.

NO - Check the following:

a. If the Form Feed indicator is lit, take the printer off-line and click the FORM FEED key to print the remaining partial page stored in the printer.

b. If no error message is observed, make sure the Configuration Menu (`DEVICE CONFIG`) item `AUTOCONT` is set to `OFF`.

c. If you are losing print data, check your software application to ensure you have no mistakes in the file you are trying to print.

d. Make sure your interface cable is the proper cable and is securely connected to your computer and printer.

e. Try another interface cable to make sure the one you have been using is not defective.

f. If an error message is displayed, see "Printer Messages" earlier in this chapter to learn more about the reasons for the message.

7. Are you having paper jams / print quality problems?

YES - Paper jams and print quality problems are discussed later in this chapter.

NO - If you are experiencing a printer problem that is not described in this checklist, and no message is displayed on the control panel, refer to chapter 7, "Maintenance and Adjustments." If you still cannot identify the problem after following the procedures in chapter 7, see chapter 9, "Service and Support."

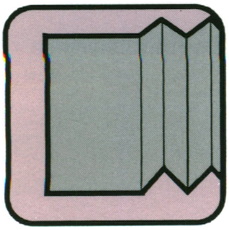
Preventing Paper Jams

The following list explains some common causes of paper jams, and the best ways to avoid them.

1. Your printer is not level.

Note

The printer must be placed on a hard, flat, stable surface or frequent jams will occur. The printer must also sit completely on a single surface, never spanning two or more surfaces.



2. Your paper, envelopes, labels or overhead transparencies may not meet the guidelines set for the printer.
   - Avoid very smooth and very coarse paper.
   - If your printer is feeding two or more pages at once, you may have a type of paper that is difficult to separate. Remove the paper from the paper tray, and fan the edges of the paper to separate the pages.

     For more information, refer to appendix E, "Selecting Paper and Other Print Media."
3. You may be using your paper or print media incorrectly.
   - Store your print media in a stable environment, avoiding extremes in temperature and humidity.
   - Load paper into the paper tray carefully. If a page is folded or wrinkled, remove it. See "Preparing the Multi-Purpose Tray" in chapter 3, "Preparing the Optional Lower Cassette" in chapter 4, or appendix E, "Loading Paper into the Printer."
   - Print on the correct side of the paper. Most paper manufacturers place an arrow on the end of the paper ream wrap to specify which side of the page is the correct side for printing. If you are having problems, remove the paper stack from the tray, rotate it 180°, turn it over, and then place it back in the tray.

4. Your printer's paper path may need to be cleaned. Check "Cleaning the Printer" on page 7-13, for detailed cleaning instructions.
    - Use cleaning paper every time the toner cartridge is replaced to prevent toner build-up.
    - Also use cleaning paper if your printer is experiencing frequent paper jams.
5. You may need to have your printer repaired. See chapter 9, "Service and Support."
    - Worn-out rollers can cause multiple-feed problems or paper jams.
    - High volume printing requires more frequent service.

Clearing Jams

If `13 PAPER JAM` appears in the display window, paper has stopped in the printer. If a paper jam occurs, remove any paper from the Multi-Purpose tray, then open the paper path door and look inside. Carefully remove the paper jamming the printer. Avoid tearing the page to ensure you remove it all. **Keep your fingers away from the hot fuser roller.** If the page tears as you remove it, check inside the printer for small pieces of paper.

Note

The printer must be placed on a hard, flat surface or frequent jams will occur. The printer must also sit completely on a single surface, never spanning two or more surfaces.

It is possible for more than one sheet of paper to be caught in the printer during a paper jam, so check every area for paper (see figure 8-1).

Paper jams occur in either the fuser area (A), or the paper pickup area (B).

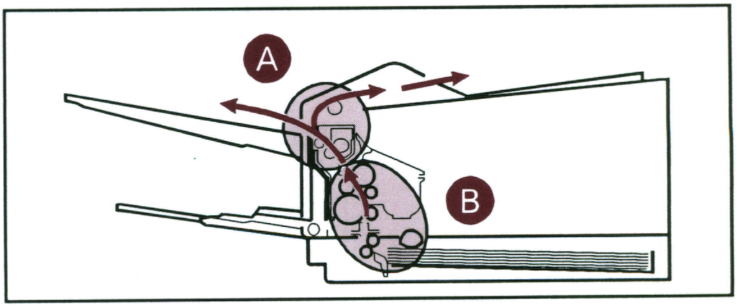


Figure 8-1. Paper Jam Locations

Paper Pick-Up Area

1. Remove any paper from the Multi-Purpose tray.
2. If paper is jammed in the Multi-Purpose tray or Optional Lower Cassette tray paper pick-up area, open the paper path door and remove the jammed paper using two hands. Also remove any paper fragments. *If* paper fragments are left inside, printer jams will occur until they are removed.

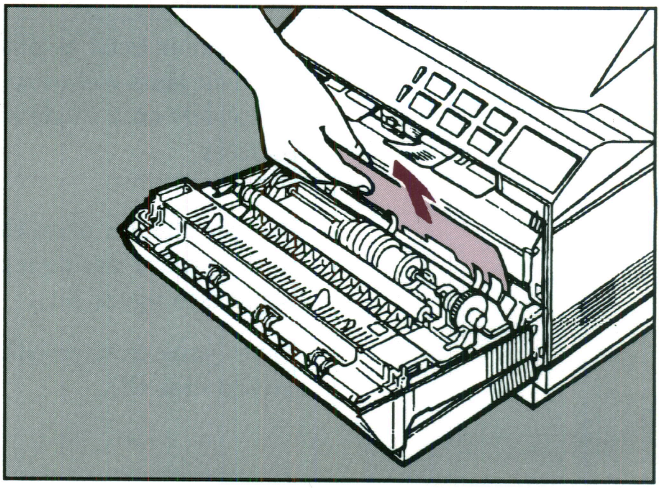


Figure 8-2.
Clearing a Paper Jam in the Paper Pick-up Area

Note

After a paper jam has occurred, toner may be left on the rollers and guides inside the printer. The pages printed immediately following the paper jam may pick up this toner.

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3. If paper is jammed in the Optional Lower Cassette, you need to remove the paper tray to clear the jammed paper (see figures 8-3 and 8-4).

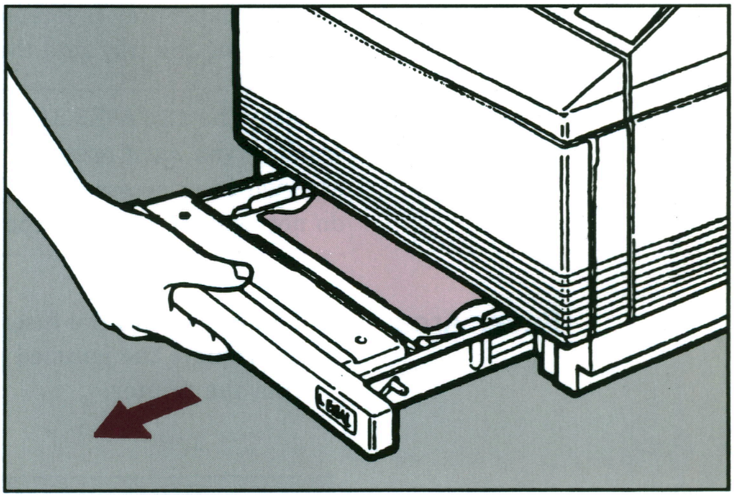


Figure 8-3. Clearing the Paper Tray

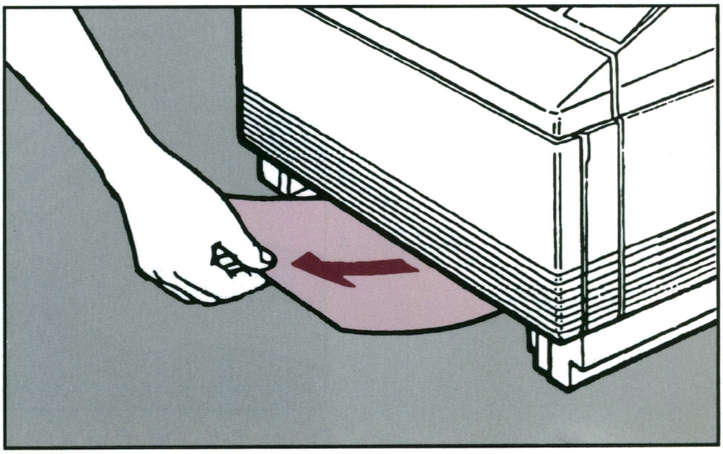


Figure 8-4.
Clearing Paper Jammed in Optional Lower Cassette Base

Check to make sure the paper in the Optional Lower Cassette paper tray is located and aligned properly before re-inserting the tray into the printer.

Note

To clear the `13 PAPER JAM` message from the display window, you *must* open the paper path door, or the external fuser access door. *If* you remove a paper jam and do not open either door, the message will not be cleared.

Fuser Area

1. If paper jams in the fuser roller area, open the printer and remove the jammed paper, pulling it firmly away from the printer.

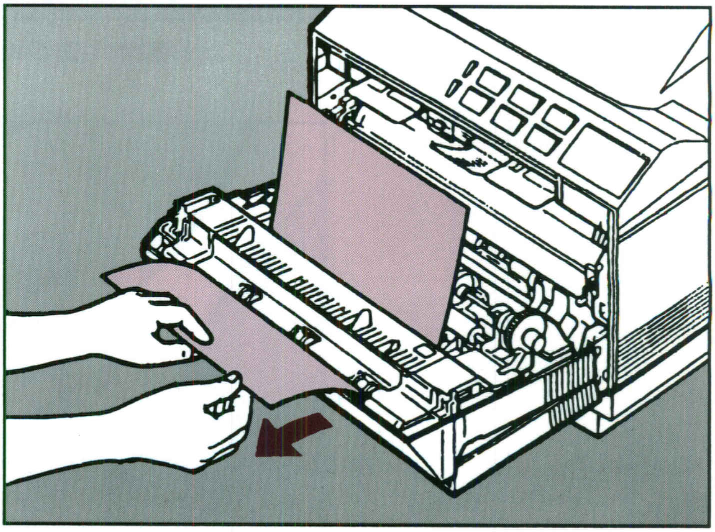


Figure 8-5. Clearing a Paper Jam in the Fuser Roller Area

2. Open the internal fuser access door and check for jammed paper.

Warning ✋ **The fuser area is HOT. Do not touch the fuser rollers or injury may result.**

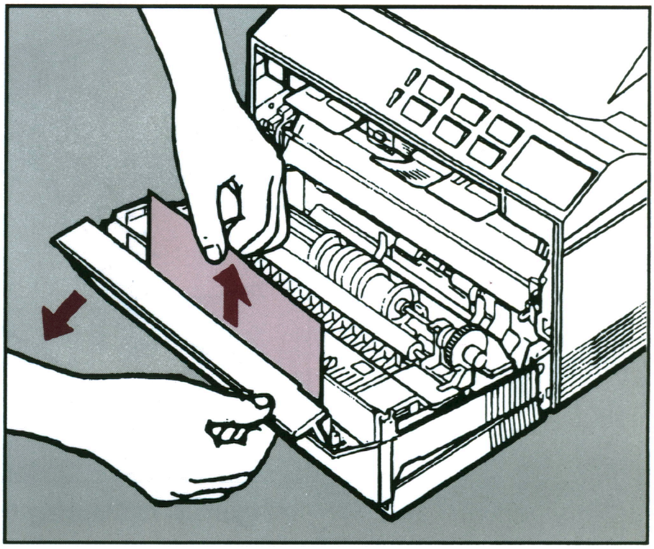


Figure 8-6.
Clearing a Paper Jam from the Internal Fuser Access Door

3. After checking inside the printer for jammed paper, close the paper path door. Open the external fuser access door ① and check for paper ②.

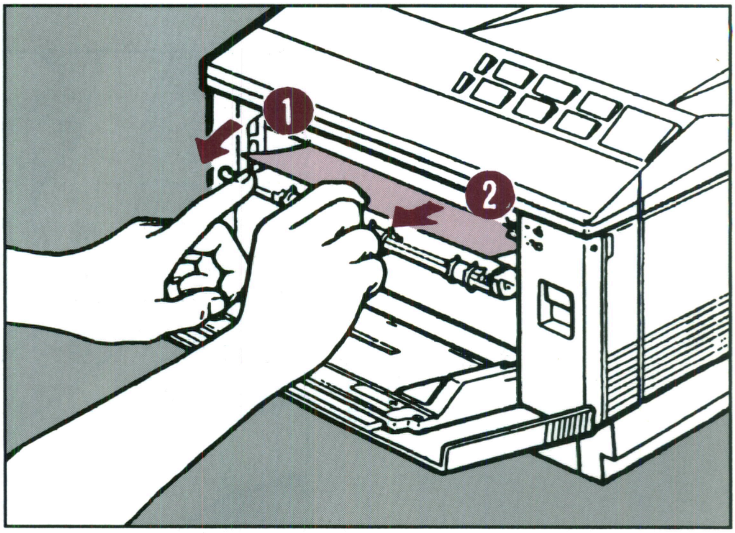


Figure 8-7. Clearing the External Fuser Access Door

Pick-Up and Fuser Areas

If paper jams in both the pick-up area and the fuser area, use two hands when removing the paper to avoid tearing it (see figure 8-8).

Warning

The fuser area is HOT. Do not touch the fuser rollers or injury may result. (See Ⓐ in figure 8-8 for fuser roller location.)

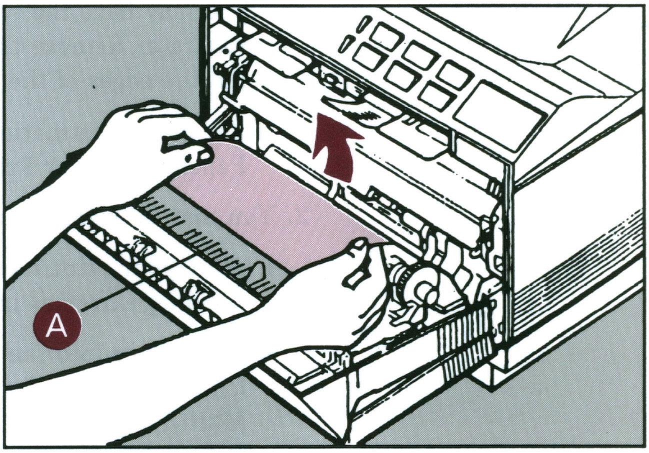
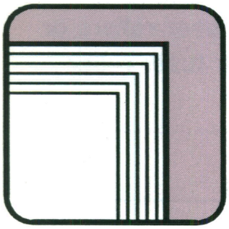


Figure 8-8. Clearing the Pick-Up/Fuser Area

Caution

Remove the paper jam carefully. Toner from the jammed paper can stain your clothes. If your clothes get toner on them, wipe the toner off with a dry cloth, and wash the clothes in **cold** water. Hot water sets toner into fabric.

Preventing Multiple Feeds



The following list explains some common causes of printer multiple feeds, (two or more pieces of media picked up at a time), and the best way to avoid them.

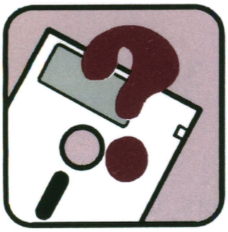
1. Your paper, envelopes, labels or overhead transparencies may not meet the guidelines set for the printer.
   - Avoid very smooth and very coarse paper.
   - If your printer is feeding two or more pages at once, you may have the type of paper that is difficult to separate. Remove the paper from the paper tray, and fan the edges of the paper to separate the pages.

     For more information, refer to appendix E, "Selecting Paper and Other Print Media".
2. You may be using your paper or print media incorrectly.
   - Store your print media in a stable environment, avoiding extremes in temperature and humidity.
   - Load paper into the paper tray carefully. If a page is folded or wrinkled, remove it. See "Preparing the Multi-Purpose Tray" in chapter 3, "Preparing the Optional Lower Cassette" in chapter 4, or appendix E, "Loading Paper into the Printer."

Caution

Never add paper or other print media to the top of an existing stack in the Multi-Purpose tray while the printer is printing or a severe paper jam may occur.

Troubleshooting Font Problems



Check the following if you are having trouble selecting a font using software commands:

1. The font you are trying to use may not be available.
   - Make sure by printing a Font List printout.
   - If you are selecting a font from a cartridge, make sure you have first installed that cartridge properly.
   - If you are selecting a soft font, make sure you have downloaded the font to the printer.
2. Make sure you are using the correct font selection commands. Review "Selecting Fonts Using Printer Commands" on page 6-24.
3. Make sure your software printer driver supports the font cartridges or soft fonts you are trying to use. Check the printer set-up instructions in your software documentation or refer to the *Software Application Notes* manual.
4. Make sure your font cartridge is firmly seated in the slot.
   - Click the ON LINE key to take the printer off-line. The green On-Line indicator will go out.
   - Reseat the font cartridge by pulling it out then pushing the cartridge all the way in until it clicks. You should feel and hear it snap into place. **Do not be afraid to push very hard.**
5. You may be using the wrong symbol set if some of your characters are printing while others are not.
   - Your software may not support some symbol sets.
   - Remember that your printer's default symbol set may not match your software's default symbol set (for example, the default DOS symbol set is PC-8.

- You may be using an early font cartridge that does not have six of the Roman-8 characters, which are necessary for ISO symbol sets. These characters are:

  Ý ý · µ ¶ ¾

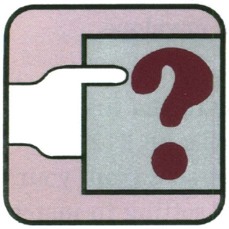
  If you need to print one of these characters, use one of the printer's internal fonts.

Check the following if you are having trouble selecting your default font using the control panel:

- The message `10 RESET TO SAVE` appears in the display.
  - Hold down the Alt key and click the Reset key.
  - The message `07 RESET` appears. **Remember**, this will erase any temporary fonts, macros, and page data stored in the printer's memory.
- Make sure you selected the correct font from the control panel.
  - Check by printing a Font Printout and comparing the Font # information with the control panel selection.
- Are you using the control panel's Printing Menu correctly?
  - Review the instructions in chapter 2 for correct operation.

- Check to see that the font cartridge or the downloaded soft font is available in the printer.
  - ☐ Check by printing a Font List printout.
  - ☐ Also, make sure that any installed font cartridges are properly seated.

Troubleshooting Manual Feed



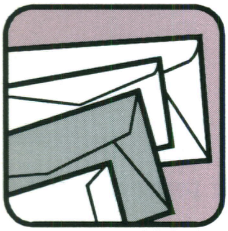
If you are having trouble manually feeding paper into the printer, check the following:

- Are the printer commands entered correctly?
- Is your software overriding the manual feed selection you entered at the control panel?
- If your software is not sending printer commands, is the printer control panel set up correctly?
- Is the paper, transparency, or envelope inserted far enough into the machine?
- If the envelope has a gray background, try setting the print density to a different setting.
- Did you select the detachable front output tray for envelopes, labels and overhead transparencies?
- If your envelopes are jamming, did you try backing off the paper width adjuster, leaving a slight gap?
- Try inserting only one envelope at a time.

Note

The HP LaserJet IIIP printer automatically feeds any remaining paper or other print media in the Multi-Purpose tray when the TRAYS menu item is set to `TRAYS LC ONLY *`. Refer to "Using MP Priority Feed" on page 4-11 for more information on MP priority feed.

Solving Typical Envelope Problems



Check your software documentation if the envelope problem is caused by your software or refer to the *Software Application Notes*.

The following information addresses problems that may occur in the day-to-day process of printing envelopes. Because envelopes are composed of multiple layers of paper, print quality on envelopes may not be as high as printing on regular paper. Also a higher jam rate may occur when printing envelopes. See "Envelopes" in appendix E for specific information.

Print your envelope data on plain paper to determine if the problem is attributed to the printer or the envelope.

MP LOAD and ME LOAD Messages

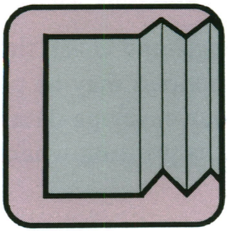
If you get an `MP LOAD` or `ME LOAD` message in the first line of the control panel display, the front panel's `MP SIZE` setting does not match the job size request sent from your software. Change the front panel `MP SIZE` setting to match the desired size, or hold down the Alt key and click the Continue key to override the `MP LOAD` or `ME LOAD` message.

Multiple Feeds

If two or more envelopes are fed at once, check the following.

- **Do not** use envelopes that have been previously run through any laser printer.
- Load envelopes neatly.
- Loosely stack envelopes in the Multi-Purpose or Envelope tray. Do not compress the envelopes or stack them above the limit marks of either tray.
- Make sure the envelope flaps are not interlocked.
- Try a new box of envelopes or try changing to another type of envelope.
- Try backing off the media width adjuster slightly, leaving a small gap between it and the envelopes.

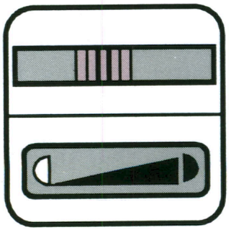
Frequent Jamming



Frequent jams while printing envelopes may be caused by one of the following:

- The envelopes are not well constructed. Consult your envelope supplier. Purchase envelopes that are manufactured for use in laser printers.
- The envelopes do not meet the media guidelines because they are too stiff, too heavy or too smooth. You may need to use a lighter weight envelope; basis weight should not exceed 24 pound (90 gm/m^2).
- The envelopes have been stored or handled improperly; the edges are curled, wrinkled or "dog-eared." **Do not** use envelopes that have been damaged or jams will occur.
- Too many envelopes are loaded into the envelope tray. Make sure the envelopes are not compressed or loaded past the limit marks in the envelope tray.
- The guides are adjusted too tightly, causing the envelopes to buckle before they enter the paper path. Make sure the envelope width and length guides are not too tight against the envelopes (allow a small gap between the guides and the envelope stack).

Print Quality



If your print is distorted, partially missing or poor in quality, or if gray shading appears in the non-printed area of the envelope, follow these guidelines.

- Try adjusting the print density slide to minimize background scatter. See "Adjusting Print Density" in chapter 7.
- Avoid printing on the seams of the envelope because inconsistent and irregular print occurs.
- Try changing the envelope paper type, weight or surface finish. See "Envelopes" in appendix E.

Blank Envelopes

If the envelope feeds into the printer properly but comes out blank, follow these guidelines to find out why:

- Check the software margin settings, and check the envelope size you selected. The address may be printing off the envelope. Try printing your envelope data on a regular sheet of paper to see if it is printing where you do not expect it.
- If you enter printer commands to select the envelope, check to see they are entered properly. Printer commands must be entered exactly as shown, paying careful attention to uppercase and lowercase letters.

  When entering printer commands, be careful to distinguish between the lowercase letter ℓ and the number 1, and between the number 0 and an uppercase letter O.

Wrong Margins

If the print is in the wrong position on the envelope, follow these guidelines:

- Try adjusting the margin and tab settings in your software.
- Check the control panel Printing Menu to see what envelope size you selected. You may be using COM-10 while your printer is set up to print on DL.

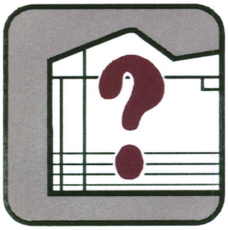
Wrinkling

If wrinkles appear in the envelopes after printing, follow these guidelines:

- Use the **Front** output tray and ensure that the Output tray selector button is in the down position. The printer's paper path is simplified and shortened when the detachable front output tray is used.

- Use envelopes with tight construction (not baggy), and check the edges for sharp creases. If the creases are not sharp, you may have to crease them yourself to prevent wrinkling.
- Store envelopes in the proper environment. Do not store them in an extremely cold, hot, humid or dry environment.

Commonly Asked Questions



Hewlett-Packard has support services available to help you in case you have questions about your LaserJet printer. Before you call for help, read the following list of questions our customers commonly ask:

Q: How can I reduce the curl on my printed pages?

A: If the paper on which you are printing tends to **curl** *as it passes through the printer, turn the paper stack over and print on the reverse side. You may also want to try printing to the detachable front output tray. See chapter 3 for information on the detachable front output tray.*

Q: Why do I get a printer error message on my computer screen after 3 or 4 pages have printed?

A: You may have a problem with your computer's configuration, such as with the MODE statement(s). Refer to the HP LaserJet IIIP Printer Getting Started Guide for more information.

Q: What is the benefit of using the Centronics parallel interface over the serial interface?

A: The Centronics parallel interface can transfer raster graphics data and large fonts to the printer much faster than the serial interface.

Q: Is there any way that I can create a document on my IBM PC that uses the IBM Line-drawing set, and have it print correctly on my printer?

A: Yes, the printer contains the PC-8 symbol set, which you can access using your software or the control panel Printing Menu selection `SYM SET PC-8 *`.

Q: I am using a proportionally spaced font. How do I get an even right margin?

A: Right justification with proportionally spaced fonts is a feature of the software package. Determine if your software provides right justification of proportionally spaced fonts.

Q: How do I access the two levels of control panel menu options – the Printing Menu and the Configuration Menu?

A: To access the Printing Menu, click the [ON LINE] *key to take the printer off-line. Then click the* [MENU] *key repeatedly to step through the Printing Menu selections that control the printed output.*

To access the Configuration Menu, first take the printer off-line, then repeatedly click the [MENU] *key until* `DEVICE CONFIG` *appears. Click the* [ENTER] *key and* `AUTO CONT` *appears in the first line of the display. Then continue to click the* [MENU] *key to move through the Configuration Menu.*

Q: Why do I get garbled text when I print?

A: If you get garbled text when printing directly from DOS (`DIR>PRN` *), check to make sure your interface cable is attached securely to your printer and your computer. If you do not get garbled text when printing from DOS, the problem probably is with your software package or the software driver.*

You should also check to make sure you do not have a defective printer interface cable. In addition, make sure the correct symbol set is selected. Try performing a `09 MENU RESET` *to return the printer to its factory default settings.*

Q: I have printed a Font Printout and am trying to access the internal font for Courier bold, #I05. When I use the printer command $^{E}_{C}$ (#X for accessing a font by its ID number, the printer does not recognize that command. What am I doing wrong?

A: You cannot access the internal or cartridge fonts using the above escape sequence. You can use this sequence only to access fonts that you have previously assigned an ID number. Don't confuse the font # and the font ID; they are not the same.

Q: What kind of paper should I use with my LaserJet printer?

A: The HP LaserJet IIIP printer works well with most types of paper. Variables in paper composition and manufacturing may affect print quality and paper handling. Refer to appendix E for more detailed paper guidelines.

Q: I replaced my toner cartridge and now nothing is printing. Why?

A: Make sure you removed the sealing tape from the toner cartridge.

Q: Can my toner cartridge be refilled when it runs out of toner or do I have to purchase a new one?

A: HP does not recommend the use of refilled toner cartridges. The electrophotographic drum (located in the toner cartridge) is nearing the end of its designed life when the toner runs out. Damage to the printer resulting from the use of a refilled cartridge will not be covered by Hewlett-Packard's warranty and service agreements.

Q: Why do I get a `MP`, `LC` or `LE LOAD` message on the display of my printer?

A: Your software is requesting a size of paper for which your printer is not currently configured. Check the `MP SIZE` *setting, and make sure the appropriate paper is loaded in the requested source tray.*

Q: I am trying to create an HP-GL/2 plot and nothing prints. What am I doing?

A: Have you selected a pen (SP1) for your plot?

Q: Why does the first page of my document print with the correct top margin, but then following pages start printing lower and lower, with a larger top margin?

A: So-called "creeping text" occurs when the number of lines per page (page length) in your software application exceeds the number of lines per page set for the printer. The printer has a default unprintable region of three lines at both the top and bottom of the page, and by default prints 60 lines per page (on 11-inch paper). Most software applications default to 54 or 66 lines per page. Set your application software to send only 60 lines per page, or you may try changing the lines of text to 54 or 66 on the control panel Printing Menu. However, your software may still override the new setting.

Q: I do not have a HP LaserJet IIIP printer printer driver available with my software. What should I use?

A: If a HP LaserJet IIIP printer printer driver is not available, select the driver definition that is the closest to the printer's features that you want to use. A LaserJet IID or IIP printer driver should provide paper handling support (dual trays), but will not give you access to scalable fonts or PCL 5 language features. A LaserJet III driver should provide scalable font and PCL 5 features, but will not support the paper handling features of the HP LaserJet IIIP printer printer. Call your application manufacturer for information concerning LaserJet printer support. A driver for the LaserJet IIID would be the closest match. If a LaserJet IIP, III, or IIID driver is not available, any LaserJet driver will provide minimal feature support.

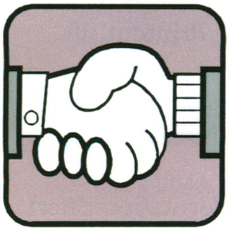
Q: Can my LaserJet printer support other printer languages?

A: Yes! Although your LaserJet printer is capable of far more features through the PCL 5 language than ever before, Hewlett-Packard now also provides PostScript printer language support. You can order a personality cartridge, which is used like font cartridges, through HP's Direct Marketing Division or your local HP authorized dealer (see inside the front cover of this manual). Also see your HP LaserJet Accessory Catalog for additional information.

9

Service and Support

Introduction



Hewlett-Packard and its authorized dealers stand behind the HP product you have purchased. Depending on how you purchase and use your equipment, the best source of support may be your own organization, your HP dealer, or the Hewlett-Packard Company. Your warranty statement is included in this chapter (see "Warranty"). Please read it carefully and retain it for your records.

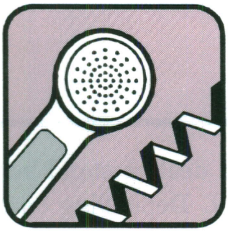
Assistance from Your Organization

If your organization has many HP printers, the best source of assistance may be within your own company. Many companies designate central support personnel to help you when you have problems with your printer or when you need consumable items such as EP-L (toner) cartridges or paper. These support personnel, in turn, can call special resources within HP when necessary.

Assistance from Your Local Dealer

If you purchased your printer from an HP dealer or large system vendor, your dealer may be the best source of assistance. The salesperson is familiar with your needs, equipment, configuration and software, and should be able to provide you with the information you need. Your dealer can also access special support resources and programs within HP. Contact your dealer for details on available support options.

Help from the Personal Peripherals Assist Line



If your organization's support personnel and your dealer are unable to answer your question, Hewlett-Packard has a Personal Peripherals Assist Line available for you. The Assist Line provides customer technical support.

Before you call the Personal Peripherals Assist Line, make sure you do the following:

- Check the troubleshooting information and checklist in chapter 8. They provide extensive help for identifying and correcting most common problems.
- Use the control panel to print a Self Test Printout, if possible.
- Check with your software vendor or refer to your software documentation if you suspect a software problem.
- Complete the LaserJet Printer Set-up Information Sheet on the inside front cover of this manual. Have this information available when you call.

The Personal Peripherals Assist Line is available from 7 AM until 6 PM (Mountain Time) on Monday, Tuesday, Thursday and Friday, and 7 AM until 4 PM on Wednesday.

The Personal Peripherals Assist Line telephone number is:

208-323-2551

If you have a FAX machine, you can call HP first from your FAX machine for 24-hour access to updated software application notes and ordering information for printer drivers. The HP FAX information number is:

208-344-4809

Hardware Repairs

Recognizing that mechanical parts do wear, and that electronic devices do occasionally need service, high-quality, professional hardware support is provided through *Service Authorized HP Dealer* centers and the world-wide network of *HP Sales and Service Offices*. These offices are listed in this manual following the index.

For assistance in locating the service center nearest you, call:

800-835-4747

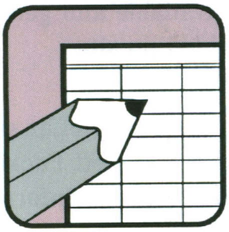
Note

To have your printer serviced by a Hewlett-Packard authorized technician, you must make arrangements to have it serviced in the country of purchase.

HP Maintenance Agreements

HP has several types of maintenance agreements that meet a wide range of support needs. The following paragraphs describe these services. To obtain one of these services, call **(800) 835-4747**.

On-Site Service Agreements



To provide you with the support level best suited to your system usage and support budget, HP has on-site service agreements with three response times.

Priority On-Site Service is designed for production-critical applications, giving you four-hour service response to your site for calls made during normal HP business hours.

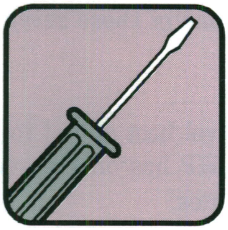
Next Day On-Site Service provides on-site support by the next working day following your service request. Extended coverage hours and extended travel beyond HP designated service zones are available for additional charges on most on-site service agreements.

Weekly (Volume) On-Site Service Agreement, for organizations with many HP LaserJet printers, provides economical, scheduled on-site coverage. Designated for customer sites using 25 or more workstation products, this service provides scheduled weekly repair visits to your central location. HP can write an agreement for any combination of 25 or more workstation products including printers, plotters, computers and disk drives.

Customer Return Service

With *Customer Return Service*, you send the printer to a nearby HP Customer Service Center, where your product will be repaired, tested and return-shipped within three working days. This agreement is the most economical service, and you get higher-priority service than per-incident repairs. An additional benefit is that you can accurately budget support costs with no unexpected expenses.

Per-Incident Repair Services



In addition to contractual services, HP offers per-incident services. A fixed, Standard Repair Price (STREP) is available at HP Customer Service centers. Your product will be repaired at a fixed price regardless of the time and parts required to accomplish the task. Repairs are typically completed within five working days of receipt at the HP Customer Service Centers. For the HP Customer Service Center nearest you, call **(800) 835-4747**.

Time-and-materials service is also available and generally applies to per-incident repairs provided on-site.

Dealer Sponsored Service Agreements

Your local, service-authorized HP dealer may offer service options in addition to those offered by Hewlett-Packard. Please contact your particular dealer for more information.

Warranty

This warranty gives you specific legal rights. You may also have other rights which vary from state to state or province to province.

One-Year Limited Warranty

Hewlett-Packard warrants its LaserJet hardware products against defects in materials and workmanship for a period of one year from the date of purchase by the end user. During the warranty period, Hewlett-Packard will, at its option, either repair or replace products which prove to be defective.

Should Hewlett-Packard be unable to repair or replace the product within a reasonable amount of time, a refund of the purchase price may be given upon return of the product.

Exclusions

The warranty on your LaserJet printer shall not apply to defects resulting from:

- Improper or inadequate maintenance by the customer.
- Customer supplied software or interfacing.
- Unauthorized modification or misuse.
- Operation outside of the environmental specifications for the product.
- Operation using non-supported printing media.
- Duty cycle abuse (see note on next page).
- Operating the printer from a mechanical switchbox without a designated surge protector.
- Improper site preparation and maintenance.
- Use of non-HP EP-L (toner) cartridges, font/personality cartridges, memory boards or interface boards.
- Use of refilled EP-L (toner) cartridges.

Note

Operation of the printer beyond the limit of its **duty cycle** (printing greater than the equivalent of 8,000 single-sided pages per month) shall be deemed printer abuse and all repairs thereafter will be billed on a time and materials basis.

If you are using a mechanical switchbox, ensure that it is equipped with a surge protector. Damage to your printer could occur from the use of unprotected mechanical switchboxes.

The warranty period begins either on the date of customer purchase or, if the purchase price includes installation by Hewlett-Packard, on the date of installation.

If your hardware fails during the warranty period, contact only a service-authorized HP dealer or an HP Customer Service Center.

Warranty Limitations

The warranty set forth above is exclusive and no other warranty, whether written or oral, is expressed or implied. Hewlett-Packard specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

Some states or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you. However, any implied warranty of merchantability or fitness is limited to the one-year duration of this written warranty.

Service During the Warranty Period

If your hardware should fail during the warranty period, contact a service-authorized HP dealer, or an HP Customer Service Center.

When sending equipment to an HP Customer Service Center or service-authorized HP dealer, follow the repacking guidelines listed below. Also, complete and enclose a copy of the Service Information Form at the end of this chapter, and enclose a copy of your proof of purchase. Insuring the equipment for shipment is recommended.

Warning **Shipping damage as a result of inadequate packaging is the customer's responsibility. Use the original packing materials whenever possible.**

Service After the Warranty Period

If your hardware fails after the warranty period, and you have an HP Maintenance Agreement, request service as specified in that agreement. If you do not have an HP Maintenance Agreement, contact a service-authorized HP dealer or an HP Customer Service Center to obtain service.

When sending equipment to an HP Customer Service Center, follow the repacking guidelines listed on the next page. Also, complete and enclose a copy of the Service Information Form (at the end of this chapter). Insuring the equipment for shipment is recommended.

Repacking Guidelines for Returning Your Printer

- Remove and retain any font cartridges installed in the printer.
- Remove and retain the toner cartridge.
- Remove and retain the Optional Lower Cassette.
- Use the original shipping container and packing materials, if possible.

Note

If you have already disposed of your printer's packaging material and are unable to locate another package, the packaging can be ordered from HP's Support Materials Organization at the following phone numbers:

800-227-8164 (U.S.)
416-678-9430 (Canada)
41-22-83-81-11 (Europe)

Ask for part number 33471-00902. The proper packaging material (box and inserts) will be sent to you for a charge.

- Include the completed copy of the Service Information Form. Include print samples which illustrate the problems you are having, if applicable.
- Include 50-100 sheets of any problem paper or forms, if possible.

Service Information Form (For HP Customer Service Center or a Service-Authorized HP Dealer)

Please call 800-835-4747 to locate the authorized service center in your area.

When requesting service, please fill out this Service Information Form. This form needs to be shipped with your equipment. Service cannot begin until we have this information.

Who is returning this equipment?

Company/Institution ______________________ Date ________________

Person to Contact ________________________ Phone ________________

Alternate Contact ________________________ Phone ________________

Return Shipping Address	**Special Shipping Instructions**
______________________	______________________
______________________	______________________
______________________	______________________

What is being sent?

Model No. ____________________ Serial No. ____________________

Be sure that you have followed the procedures for troubleshooting in the user's manual before returning equipment. Don't ship accessories which are not required to complete the repair (manuals, cleaning supplies, etc.).

What needs to be done?

1. Describe the conditions of the failure. (What was the failure? What were you doing when the failure occurred? What software were you running? Is the failure repeatable?)

   ____

   ____

2. If failure is intermittent, how much time elapses between failures?

____

3. Is unit connected to any of the following? (Give manufacturer and model #.)

Personal Computer ____________________ Modem ____________________
Other ____

4. Additional Comments:

____

____

5. Please attach any relevant printouts when returning equipment.

How will you pay for the repair? (Fill in the appropriate information.)

Warranty: Purchased/Received Date ________________________

Enclose proof of purchase or receiving document with original received date.

Maintenance Contract: Contract No. ________________________

Order: Purchase Order No. ________________________

Except for contract and warranty service, a purchase order number and/or authorized signature must accompany any request for service. If standard repair prices do not apply, a minimum purchase order is required. Standard repair prices may be obtained by contacting an authorized Repair Center.

Authorized Signature ____________________ Phone __________

Billing Address	**Special Billing Instructions**
____________________	____________________
____________________	____________________
____________________	____________________

Thank You

A

Printer Commands

Introduction

This appendix lists the HP LaserJet IIIP printer commands. Table A-1 lists the PCL context printer commands in hierarchical order and gives the decimal and hexadecimal equivalents of each. Table A-2 lists the HP-GL/2 context printer commands.

Refer to the *PCL 5 Printer Technical Reference Manual* and the *PCL 5 Comparison Guide* for detailed explanations of these commands and their use.

Table A-1. HP LaserJet IIIP Printer Commands — PCL Context

FUNCTION	PARAMETER	COMMAND	DECIMAL VALUE	HEXADECIMAL VALUE
JOB CONTROL COMMANDS				
Reset				
Reset	—	EcE	027 069	1B 45
Number of Copies	# of Copies (1–99)	Ec&ℓ#X *(x)*	027 038 108 #...# 088 *(120)*	1B 26 6C #...# 58 *(78)*
Long-Edge (Left) Offset Registration	# of Decipoints (1/720")	Ec&ℓ#U *(u)*	027 038 108 #...# 085 *(117)*	1B 26 6C #...# 55 *(75)*
Short-Edge (Top) Offset Registration	# of Decipoints (1/720")	Ec&ℓ#Z *(z)*	027 038 108 #...# 090 *(122)*	1B 26 6C #...# 5A *(7A)*
PAGE CONTROL COMMANDS				
Page Length and Size				
Paper Source	Eject Page	Ec&ℓ0H *(h)*	027 038 108 048 072 *(104)*	1B 26 6C 30 48 *(68)*
	MP Tray	Ec&ℓ1H *(h)*	027 038 108 049 072 *(104)*	1B 26 6C 31 48 *(68)*
	Manual Feed	Ec&ℓ2H *(h)*	027 038 108 050 072 *(104)*	1B 26 6C 32 48 *(68)*
	Manual Envelope Feed	Ec&ℓ3H *(h)*	027 038 103 051 072 *(104)*	1B 26 6C 33 48 *(68)*
	Lower Tray	Ec&ℓ4H *(h)*	027 038 108 052 072 *(104)*	1B 26 6C 34 48 *(68)*
	Lower Cassette	Ec&ℓ6H *(h)*	027 038 108 054 072 *(104)*	1B 26 6C 36 48 *(68)*
Paper Destination	Upper Output Bin	Ec&ℓ1G *(g)*	027 038 108 049 071 *(103)*	1B 26 6C 31 47 *(67)*
Job Size (page size)	Executive	Ec&ℓ1A *(a)*	027 038 108 049 065 *(97)*	1B 26 6C 31 41 *(61)*
	Letter	Ec&ℓ2A *(a)*	027 038 108 050 065 *(97)*	1B 26 6C 32 41 *(61)*
	Legal	Ec&ℓ3A *(a)*	027 038 108 051 065 *(97)*	1B 26 6C 33 41 *(61)*
	A4	Ec&ℓ26A *(a)*	027 038 108 050 054 065 *(97)*	1B 26 6C 32 36 41 *(61)*
	Monarch	Ec&ℓ80A *(a)*	027 038 108 056 048 065 *(97)*	1B 26 6C 38 30 41 *(61)*
	COM 10	Ec&ℓ81A *(a)*	027 038 108 056 049 065 *(97)*	1B 26 6C 38 31 41 *(61)*
	DL	Ec&ℓ90A *(a)*	027 038 108 057 048 065 *(97)*	1B 26 6C 39 30 41 *(61)*
	C5	Ec&ℓ91A *(a)*	027 038 108 057 049 065 *(97)*	1B 26 6C 39 31 41 *(61)*
Page Length	# of Lines (5–128)	Ec&ℓ#P *(p)*	027 038 108 #...# 080 *(112)*	1B 26 6C #...# 050 *(70)*
Orientation				
Orientation	Portrait	Ec&ℓ0O *(o)*	027 038 108 048 079 *(111)*	1B 26 6C 30 4F *(6F)*
	Landscape	Ec&ℓ1O *(o)*	027 038 108 049 079 *(111)*	1B 26 6C 31 4F *(6F)*
	Reverse Portrait	Ec&ℓ2O *(o)*	027 038 108 050 079 *(111)*	1B 26 6C 32 4F *(6F)*
	Reverse Landscape	Ec&ℓ3O *(o)*	027 038 108 051 079 *(111)*	1B 26 6C 33 4F *(6F)*
Print Direction	# Degrees of Rotation (counterclockwise. 90°increments only)	Ec&a#P	027 038 097 #...# 080 *(112)*	1B 26 61 #...# 50 *(70)*

Values in the parentheses "(x)" identify the lower case of the termination character. This value is used if the printer command is combined.

Table A-1.
HP LaserJet IIIP Printer Commands — PCL Context (continued)

FUNCTION	PARAMETER	COMMAND	DECIMAL VALUE	HEXADECIMAL VALUE
Margins and Text Length				
Top Margin	# of Lines	Ec&ℓ#E *(e)*	027 038 108 #...# 069 *(101)*	1B 26 6C #...# 45 *(65)*
Text Length	# of Lines	Ec&ℓ#F *(f)*	027 038 108 #...# 070 *(102)*	1B 26 6C #...# 46 *(66)*
Left Margin	# of Columns	Ec&a#L *(l)*	027 038 097 #...# 076 *(108)*	1B 26 61 #...# 4C *(6C)*
Right Margin	# of Columns	Ec&a#M *(m)*	027 038 097 #...# 077 *(109)*	1B 26 61 #...# 4D *(6D)*
Clear Horizontal Margins	—	Ec9	027 057	1B 39
Perforation Skip Mode				
Perforation Skip	Disable	Ec&ℓ0L *(l)*	027 038 108 048 076 *(108)*	1B 26 6C 30 4C *(6C)*
	Enable	Ec&ℓ1L *(l)*	027 038 108 049 076 *(108)*	1B 26 6C 31 4C *(6C)*
Horizontal Column Spacing				
Horizontal Motion Index (HMI)	# of 1/120" Increments	Ec&k#H *(h)*	027 038 107 #...# 072 *(104)*	1B 26 6B #...# 48 *(68)*
Vertical Line Spacing				
Vertical Motion Index (VMI)	# of 1/48" Increments	Ec&ℓ#C *(c)*	027 038 108 #...# 067 *(99)*	1B 26 6C #...# 43 *(63)*
Line Spacing (Lines per inch)	1 line/inch	Ec&ℓ1D *(d)*	027 038 108 049 068 *(100)*	1B 26 6C 31 44 *(64)*
	2 lines/inch	Ec&ℓ2D *(d)*	027 038 108 050 068 *(100)*	1B 26 6C 32 44 *(64)*
	3 lines/inch	Ec&ℓ3D *(d)*	027 038 108 051 068 *(100)*	1B 26 6C 33 44 *(64)*
	4 lines/inch	Ec&ℓ4D *(d)*	027 038 108 052 068 *(100)*	1B 26 6C 34 44 *(64)*
	6 lines/inch	Ec&ℓ6D *(d)*	027 038 108 054 068 *(100)*	1B 26 6C 36 44 *(64)*
	8 lines/inch	Ec&ℓ8D *(d)*	027 038 108 056 068 *(100)*	1B 26 6C 38 44 *(64)*
	12 lines/inch	Ec&ℓ12D *(d)*	027 038 108 049 050 068 *(100)*	1B 26 6C 31 32 44 *(64)*
	16 lines/inch	Ec&ℓ16D *(d)*	027 038 108 049 054 068 *(100)*	1B 26 6C 31 36 44 *(64)*
	24 lines/inch	Ec&ℓ24D *(d)*	027 038 108 050 052 068 *(100)*	1B 26 6C 32 34 44 *(64)*
	48 lines/inch	Ec&ℓ48D *(d)*	027 038 108 052 056 068 *(100)*	1B 26 6C 34 38 44 *(64)*
CURSOR POSITIONING				
Vertical and Horizontal				
Vertical Position	# of Rows	Ec&a#R *(r)*	027 038 097 #...# 082 *(114)*	1B 26 61 #...# 52 *(72)*
	# of Dots	Ec*p#Y *(y)*	027 042 112 #...# 089 *(121)*	1B 2A 70 #...# 59 *(79)*
	# of Decipoints	Ec&a#V *(v)*	027 038 097 #...# 086 *(118)*	1B 26 61 #...# 56 *(76)*
Horizontal Position	# of Columns	Ec&a#C *(c)*	027 038 097 #...# 067 *(99)*	1B 26 61 #...# 43 *(63)*
	# of Dots	Ec*p#X *(x)*	027 042 112 #...# 088 *(120)*	1B 2A 70 #...# 58 *(78)*
	# of Decipoints	Ec&a#H *(h)*	027 038 097 #...# 072 *(104)*	1B 26 61 #...# 48 *(68)*
Half Line Feed		Ec =	027 061	1B 3D

Values in the parentheses "(x)" identify the lower case of the termination character. This value is used if the printer command is combined.

Table A-1.
HP LaserJet IIIP Printer Commands — PCL Context (continued)

FUNCTION	PARAMETER	COMMAND	DECIMAL VALUE	HEXADECIMAL VALUE
End-of-Line Termination				
Line Termination	CR=CR; LF=LF; FF=FF	Ec&k0G *(g)*	027 038 107 048 071 *(103)*	1B 26 6B 30 47 *(67)*
	CR=CR+LF; LF=LF; FF=FF	Ec&k1G *(g)*	027 038 107 049 071 *(103)*	1B 26 6B 31 47 *(67)*
	CR=CR; LF=CR+LF; FF=CR+FF	Ec&k2G *(g)*	027 038 107 050 071 *(103)*	1B 26 6B 32 47 *(67)*
	CR=CR+LF; LF=CR+LF; FF=CR+FF	Ec&k3G *(g)*	027 038 107 051 071 *(103)*	1B 26 6B 33 47 *(67)*
Push/Pop Position				
Push/Pop Position	Push	Ec&f0S *(s)*	027 038 102 048 083 *(115)*	1B 26 66 30 53 *(73)*
	Pop	Ec&f1S *(s)*	027 038 102 049 083 *(115)*	1B 26 66 31 53 *(73)*
FONT SELECTION				
Symbol Set Selection†				
Primary Symbol Set	ISO 60: Norwegian 1	Ec(0D	027 040 048 068	1B 28 30 44
	ISO 4: United Kingdom	Ec(1E	027 040 049 069	1B 28 31 45
	ISO 69: French	Ec(1F	027 040 049 070	1B 28 31 46
	ISO 21: German	Ec(1G	027 040 049 071	1B 28 31 47
	ISO 15: Italian	Ec(0I	027 040 048 073	1B 28 30 49
	Microsoft Publishing	Ec(6J	027 040 054 074	1B 28 36 4A
	DeskTop	Ec(7J	027 040 055 074	1B 28 37 4A
	PS Text	Ec(10J	027 040 049 048 074	1B 28 31 30 4A
	Ventura International	Ec(13J	027 040 049 051 074	1B 28 31 33 4A
	Ventura US	Ec(14J	027 040 049 052 074	1B 28 31 34 4A
	Ventura ITC Zapf Dingbats	Ec(9L	027 040 057 076	1B 28 39 4C
	PS ITC Zapf Dingbats	Ec(10L	027 040 049 048 076	1B 28 31 30 4C
	ITC Zapf Dingbats Series 100	Ec(11L	027 040 049 049 076	1B 28 31 31 4C
	ITC Zapf Dingbats Series 200	Ec(12L	027 040 049 050 076	1B 28 31 32 4C
	ITC Zapf Dingbats Series 300	Ec(13L	027 040 049 051 076	1B 28 31 33 4C
	PS Math	Ec(5M	027 040 053 077	1B 28 35 4D
	Ventura Math	Ec(6M	027 040 054 077	1B 28 36 40
	Math-8	Ec(8M	027 040 056 077	1B 28 38 40
	ECMA-94 Latin 1	Ec(0N	027 040 048 078	1B 28 30 4E
	ISO 11: Swedish	Ec(0S	027 040 048 083	1B 28 30 53
	ISO 17: Spanish	Ec(2S	027 040 050 083	1B 28 32 53
	ISO 6: ASCII	Ec(0U	027 040 048 085	1B 28 30 55
	Legal	Ec(1U	027 040 049 085	1B 28 31 55
	Roman8	Ec(8U	027 040 056 085	1B 28 38 55

Values in the parentheses "(x)" identify the lower case of the termination character. This value is used if the printer command is combined.

†Additional symbol sets are supported. Refer to the PCL-5 Comparison Guide.

Table A-1.
HP LaserJet IIIP Printer Commands — PCL Context (continued)

FUNCTION	PARAMETER	COMMAND	DECIMAL VALUE	HEXADECIMAL VALUE
Symbol Set Selection† (continued)				
Primary Symbol Set (continued)	Windows	Ec(9U	027 040 057 085	1B 28 39 55
	PC-8	Ec(10U	027 040 049 048 085	1B 28 31 30 55
	PC-8 D/N	Ec(11U	027 040 049 049 085	1B 28 31 31 55
	PC 850	Ec(12U	027 040 049 050 085	1B 28 31 32 55
	Pi Font	Ec(15U	027 040 049 043 085	1B 28 31 35 55
Spacing				
Primary Spacing	Fixed	Ec(s0P *(p)*	027 040 115 048 080 *(112)*	1B 28 73 30 50 *(70)*
	Proportional	Ec(s1P *(p)*	027 040 115 049 080 *(112)*	1B 28 73 31 50 *(70)*
Pitch				
Primary Pitch	# Characters/inch	Ec(s#H *(h)*	027 040 115 #...# 072 *(104)*	1B 28 73 #...# 48 *(68)*
Set Pitch Mode	10.0	Ec&k0S *(s)*	027 038 107 048 083 *(115)*	1B 26 6B 30 53 *(73)*
	Compressed (16.5-16.7)	Ec&k2S *(s)*	027 038 107 050 083 *(115)*	1B 26 6B 32 53 *(73)*
	Elite (12.0)	Ec&k4S *(s)*	027 038 107 052 083 *(115)*	1B 26 6B 34 53 *(73)*
Point Size				
Primary Height	# Points	Ec(s#V *(v)*	027 040 115 #...# 086 *(118)*	1B 28 73 #...# 56 *(76)*
Style				
Primary Style	Upright (Solid)	Ec(s0S *(s)*	027 040 115 048 083 *(115)*	1B 28 73 30 53 *(73)*
	Italic	Ec(s1S *(s)*	027 040 115 049 083 *(115)*	1B 28 73 31 53 *(73)*
	Condensed	Ec(s4S *(s)*	027 040 115 052 083 *(115)*	1B 28 73 34 53 *(73)*
	Condensed Italic	Ec(s5S *(s)*	027 040 115 053 083 *(115)*	1B 28 73 35 53 *(73)*
	Compressed (Extra Condensed)	Ec(s8S *(s)*	027 040 115 056 083 *(115)*	1B 28 73 38 53 *(73)*
	Expanded	Ec(s24S *(s)*	027 040 115 050 052 083 *(115)*	1B 28 73 32 34 53 *(73)*
	Outline	Ec(s32S *(s)*	027 040 115 051 050 083 *(115)*	1B 28 73 33 32 53 *(73)*
	Inline	Ec(s64S *(s)*	027 040 115 054 052 083 *(115)*	1B 28 73 36 34 53 *(73)*
	Shadowed	Ec(s128S *(s)*	027 040 115 049 050 056 083 *(115)*	1B 28 73 31 32 38 53 *(73)*
	Outline Shadowed	Ec(s160S *(s)*	027 040 115 049 054 048 083 *(115)*	1B 28 73 31 36 30 53 *(73)*

Additional style values may be obtained from the related documentation provided with HP's font products.

PCL 5 LaserJet Printers allow you to specify complex structures (contours, outlines, shading, etc.) and widths as well as posture. Refer to the PCL 5 LaserJet Technical Reference Manual.

Values in the parentheses "(x)" identify the lower case of the termination character. This value is used if the printer command is combined.

†Additional symbol sets are supported. Refer to the PCL-5 Comparison Guide.

The primary font printer commands in this table can be specified as secondary by replacing the left parenthesis "(" in the command with a right parenthesis ")". (Decimal Value = 41; Hexadecimal = 29).

Table A-1.
HP LaserJet IIIP Printer Commands — PCL Context (continued)

FUNCTION	PARAMETER	COMMAND	DECIMAL VALUE	HEXADECIMAL VALUE
Primary Font Stroke Weight	Ultra Thin	Ec(s-7B *(b)*	027 040 115 045 055 066 *(98)*	1B 28 73 2D 37 42 *(62)*
	Extra Thin	Ec(s-6B *(b)*	027 040 115 045 054 066 *(98)*	1B 28 73 2D 36 42 *(62)*
	Thin	Ec(s-5B *(b)*	027 040 115 045 053 066 *(98)*	1B 28 73 2D 35 42 *(62)*
	Extra Light	Ec(s-4B *(b)*	027 040 115 045 052 066 *(98)*	1B 28 73 2D 34 42 *(62)*
	Light	Ec(s-3B *(b)*	027 040 115 045 051 066 *(98)*	1B 28 73 2D 33 42 *(62)*
	Demi Light	Ec(s-2B *(b)*	027 040 115 045 050 066 *(98)*	1B 28 73 2D 32 42 *(62)*
	Semi Light	Ec(s-1B *(b)*	027 040 115 045 049 066 *(98)*	1B 28 73 2D 31 42 *(62)*
	Medium (book or text)	Ec(s0B *(b)*	027 040 115 048 066 *(98)*	1B 28 73 30 42 *(62)*
	Semi Bold	Ec(s1B *(b)*	027 040 115 049 066 *(98)*	1B 28 73 31 42 *(62)*
	Demi Bold	Ec(s2B *(b)*	027 040 115 050 066 *(98)*	1B 28 73 32 42 *(62)*
	Bold	Ec(s3B *(b)*	027 040 115 051 066 *(98)*	1B 28 73 33 42 *(62)*
	Extra Bold	Ec(s4B *(b)*	027 040 115 052 066 *(98)*	1B 28 73 34 42 *(62)*
	Black	Ec(s5B *(b)*	027 040 115 053 066 *(98)*	1B 28 73 35 42 *(62)*
	Extra Black	Ec(s6B *(b)*	027 040 115 054 066 *(98)*	1B 28 73 36 42 *(62)*
	Ultra Black	Ec(s7B *(b)*	027 040 115 055 066 *(98)*	1B 28 73 37 42 *(62)*
Primary Typeface Family				
Typeface Family	Courier	Ec(s3T *(t)*	027 040 115 051 084 *(116)*	1B 28 73 33 54 *(74)*
	Univers	Ec(s4148T *(t)*	027 040 115 052 049 052 056 084 *(116)*	1B 28 73 34 31 34 38 54 *(74)*
	LinePrinter	Ec(s0T *(t)*	027 040 115 048 084 *(116)*	1B 28 73 30 54 *(74)*
	CG Times	Ec(s4101T *(t)*	027 040 115 052 049 048 049 084 *(116)*	1B 28 73 34 31 30 31 54 *(74)*
Many more typeface families are supported. Refer to the PCL 5 Comparison Guide.				
Font Default				
Font Default	Primary Font	Ec(3@	027 040 051 064	1B 28 33 40
	Secondary Font	Ec)3@	027 041 051 064	1B 29 33 40
Underline				
Underline	Enable Fixed	Ec&d0D *(d)*	027 038 100 048 068 *(100)*	1B 26 64 30 44 *(64)*
	Enable Floating	Ec&d3D *(d)*	027 038 100 051 068 *(100)*	1B 26 64 33 44 *(64)*
	Disable	Ec&d@	027 038 100 064	1B 26 64 40
Transparent Print				
Transparent Print Data	# of Bytes	Ec&p#X [Data]	027 038 112 #...# 088	1B 26 70 #...# 58
FONT MANAGEMENT				

Values in the parentheses "(x)" identify the lower case of the termination character. This value is used if the printer command is combined.
The primary font printer commands in this table can be specified as secondary by replacing the left parenthesis "(" in the command with a right parenthesis ")" (Decimal Value = 41; Hexadecimal = 29).

Table A-1. LaserJet IIIP Printer Commands - PCL *(Cont.)*

FUNCTION	PARAMETER	COMMAND	DECIMAL VALUE	HEXADECIMAL VALUE
FONT MANAGEMENT				
Assign Font ID	Font ID #	Ec*c# D *(d)*	027 042 099 #...# 068 *(100)*	1B 2A 63 #...# 44 *(64)*
Font and Character Control	Delete all Fonts	Ec*c0 F *(f)*	027 042 099 048 070 *(102)*	1B 2A 63 30 46 *(66)*
	Delete all temporary fonts	Ec*c1F *(f)*	027 042 099 049 070 *(102)*	1B 2A 63 31 46 *(66)*
	Delete last font ID specified	Ec*c2F *(f)*	027 042 099 050 070 *(102)*	1B 2A 63 32 46 *(66)*
	Delete last character specified	Ec*c3F *(f)*	027 042 099 051 070 *(102)*	1B 2A 63 33 46 *(66)*
	Make font temporary	Ec*c4F *(f)*	027 042 099 052 070 *(102)*	1B 2A 63 34 46 *(66)*
	Make font permanent	Ec*c5F *(f)*	027 042 099 053 070 *(102)*	1B 2A 63 35 46 (66)
	Copy/Assign the currently invoked font as temporary	Ec*c6F *(f)*	027 042 099 054 070 *(102)*	1B 2A 63 36 46 *(66)*
Font Selection by ID Number				
Select font (with ID #)	ID # primary font	Ec(# X	027 040 #...# 088	1B 28 #...# 58
	ID # secondary font	Ec)# X	027 041 #...# 088	1B 29 #...# 58
SOFT FONT CREATION				
Font descriptor (font header)	# of bytes	Ec)s# W [data]	027 041 115 #...# 087	1B 29 73 #...# 57
Download character	# of bytes	Ec(s# W [data]	027 040 115 #...# 087	1B 28 73 #...# 57
Character code	Character code # (decimal)	Ec*c# E *(e)*	027 042 099 #...# 069 *(101)*	1B 24 63 #...# 45 *(65)*
Soft Symbol Set Management / Creation				
Set Symbol Set	ID #	Ec*c# R	027 040 099 #...# 082	1B 2A 63 #...# 52
Define Symbol Set	# of Bytes	Ec(f# W [Data]	027 040 102 #...# 087	1B 2A 66 #...# 46
Symbol Set Control	Delete all symbol sets	Ec*c0 S *(s)*	027 040 099 048 083 *(115)*	1B 24 63 30 53 *(73)*
	Delete all temporary symbol sets	Ec*c1S *(s)*	027 040 099 049 083 *(115)*	1B 2A 63 31 53 *(73)*
	Delete current soft symbol set (last ID#)	Ec*c2S *(s)*	027 040 099 050 083 *(115)*	1B 2A 63 32 53 *(73)*
	Make current soft symbol set temporary	Ec*c4S *(s)*	027 040 090 052 083 *(115)*	1B 2A 63 34 53 *(73)*
	Make current soft symbol set permanent	Ec*c5S *(s)*	027 040 090 053 083 *(115)*	1B 2A 63 35 53 *(73)*

Values in the parentheses "(x)" identify the lower case of the termination character. This value is used if the printer command is combined.
The primary font printer commands in this table can be specified as secondary by replacing the left parenthesis "(" in the command with a right parenthesis ")" (Decimal Value = 41; Hexadecimal = 29).

Table A-1.
HP LaserJet IIIP Printer Commands — PCL Context (continued)

FUNCTION	PARAMETER	COMMAND	DECIMAL VALUE	HEXADECIMAL VALUE
GRAPHICS				
PCL Vector Graphics Switching/Set-Up				
Enter PCL Mode	Use previous PCL cursor position	Ec%0A	027 037 048 65	1B 25 30 41
	Use current HP-GL / 2 pen position for cursor position	Ec%1A	027 037 049 65	1B 25 31 41
Enter HP-GL/2 Mode	Use Previous HP-GL/2 pen position	Ec%0B	027 037 048 066	1B 25 30 42
	Use current PCL cursor position	Ec%1B	027 037 049 066	1B 25 31 42
HP-GL/2 Plot Horizontal Size	Horizontal size in inches	Ec*c#K *(k)*	027 042 099 #...# 075 *(107)*	1B 2A 63 # ... # 48 *(6B)*
HP-GL/2 Plot Vertical Size	Vertical size in inches	Ec*c#L *(l)*	027 042 099 #...# 076 *(108)*	1B 2A 63 #...# 4C *(6C)*
Set Picture Frame Anchor Point	Set anchor point to cursor position	Ec*c0T *(t)*	027 042 099 048 084 *(116)*	1B 2A 63 30 54 *(74)*
Picture Frame Horizontal Size	Decipoints	Ec*c#X *(x)*	027 042 99 #...# 088 *(120)*	1B 2A 63 #...# 58 *(78)*
Picture Frame Vertical Size	Decipoints	Ec*c#Y *(y)*	027 042 99 #...# 089 *(121)*	1B 2A 63 #...# 59 *(79)*
Raster Graphics				
Raster Resolution	75 dots/inch	Ec*t75R *(r)*	027 042 116 055 053 082 *(114)*	1B 2A 74 37 35 52 *(72)*
	100 dots/inch	Ec*t100R *(r)*	027 042 116 049 048 048 082 *(114)*	1B 2A 74 31 30 30 52 *(72)*
	150 dots/inch	Ec*t150R *(r)*	027 042 116 049 053 048 082 *(114)*	1B 2A 74 31 35 30 52 *(72)*
	300 dots/inch	Ec*t300R *(r)*	027 042 116 051 048 048 082 *(114)*	1B 2A 74 33 30 30 52 *(72)*
Raster Graphics Presentation				
Raster Graphics Presentation	Follows orientation	Ec*r0F *(f)*	027 042 114 048 070 *(102)*	1B 2A 72 30 46 *(66)*
	Follows physical page	Ec*r3F *(f)*	027 042 114 051 070 *(102)*	1B 2A 72 33 46 *(66)*
Start Raster Graphics	Left Raster Graphics Margin	Ec*r0A *(a)*	027 042 114 048 065 *(97)*	1B 2A 72 30 41 *(61)*
	Current Cursor	Ec*r1A *(a)*	027 042 114 049 065 *(97)*	1B 2A 72 31 41 *(61)*
Raster Y Offset	# of Raster Lines of vertical movement	Ec*b#Y *(y)*	027 042 098 #...# 089 *(121)*	1B 2A 62 #...# 59 *(79)*
Set Raster Compression Mode	Unencoded	Ec*b0M *(m)*	027 042 098 048 077 *(109)*	1B 2A 62 30 4D *(6D)*
	Run-Length Encoded	Ec*b1M *(m)*	027 042 098 049 077 *(109)*	1B 2A 62 31 4D *(6D)*
	Tagged Image File Format	Ec*b2M *(m)*	027 042 098 050 077 *(109)*	1B 2A 62 32 4D *(6D)*
	Delta Row	Ec*b3M *(m)*	027 042 098 051 077 *(109)*	1B 2A 62 33 4D *(6D)*
	Adaptive compression	Ec*b5M *(m)*	027 042 098 053 077 *(109)*	1B 2A 62 35 4D *(6D)*
Transfer Raster Data	# of Bytes	Ec*b#W [data]	027 042 098 #...# 087	1B 2A 62 #...# 57
End Raster Graphics	—	Ec*rB *(b)*	027 042 114 066 *(98)*	1B 2A 72 42 *(62)*
Raster Height	# Raster Rows	Ec*r#T *(t)*	027 042 114 #...# 084 *(116)*	1B 2A 72 #...# 54 *(74)*
Raster Width	# Pixels of the Specified Resolution	Ec*r#S *(s)*	027 042 114 #...# 083 *(115)*	1B 2A 72 #...# 53 *(73)*

Values in the parentheses "(x)" identify the lower case of the termination character. This value is used if the printer command is combined.

Table A-1.
HP LaserJet IIIP Printer Commands — PCL Context (continued)

FUNCTION	PARAMETER	COMMAND		DECIMAL VALUE		HEXADECIMAL VALUE	
THE PRINT MODEL							
Imaging							
Select Pattern	Solid Black (default)	Ec*v0T	*(t)*	027 042 118 048 084	*(116)*	1B 2A 76 30 54	*(74)*
	Solid White	Ec*v1T	*(t)*	027 042 118 049 084	*(116)*	1B 2A 76 31 54	*(74)*
	HP-defined Shading Pattern	Ec*v2T	*(t)*	027 042 118 050 084	*(116)*	1B 2A 76 32 54	*(74)*
	HP-defined Cross-Hatched Pattern	Ec*v3T	*(t)*	027 042 118 051 084	*(116)*	1B 2A 76 33 54	*(74)*
	User defined pattern	Ec*y4T		027 042 118 052 084	*(116)*	1B 2A 76 34 54	*(74)*
Select Source Transparency Mode	Transparent	Ec*v0N	*(n)*	027 042 118 048 078	*(110)*	1B 2A 76 30 4E	*(6E)*
	Opaque	Ec*v1N	*(n)*	027 042 118 049 078	*(110)*	1B 2A 76 31 4E	*(6E)*
Select Pattern Transparency Mode	Transparent	Ec*v0O	*(o)*	027 042 118 048 079	*(111)*	1B 2A 76 30 4F	*(6F)*
	Opaque	Ec*v1O	*(o)*	027 042 118 049 079	*(111)*	1B 2A 76 31 4F	*(6F)*
Rectangle Dimensions							
Rectangle Width (Horizontal Size)	# of dots	Ec*c#A	*(a)*	027 042 099 #...# 065	*(97)*	1B 2A 63 #...# 41	*(61)*
	# of decipoints	Ec*c#H	*(h)*	027 042 099 #...# 072	*(104)*	1B 2A 63 #...# 48	*(68)*
Rectangle Height (Vertical Size)	# of dots	Ec*c#B	*(b)*	027 042 099 #...# 066	*(98)*	1B 2A 63 # ... # 42	*(62)*
	# of decipoints	Ec*c#V	*(v)*	027 042 099 #...# 086	*(118)*	1B 2A 63 #...# 56	*(76)*
Rectangular Area Fill							
Fill Rectangular Area	Solid Black	Ec*c0P	*(p)*	027 042 099 048 080	*(112)*	1B 2A 63 30 50	*(70)*
	Erase (solid white fill)	Ec*c1P	*(p)*	027 042 099 049 080	*(112)*	1B 2A 63 31 50	*(70)*
	Shaded Fill	Ec*c2P	*(p)*	027 042 099 050 080	*(112)*	1B 2A 63 32 50	*(70)*
	Cross-hatched Fill	Ec*c3P	*(p)*	027 042 099 051 080	*(112)*	1B 2A 63 33 50	*(70)*
	Current Pattern	Ec*c5P	*(p)*	027 042 099 053 080	*(112)*	1B 2A 63 35 50	*(70)*
Pattern ID	% of Shading or Type of Pattern	Ec*c#G	*(g)*	027 042 099 #...# 071	*(103)*	1B 2A 63 #...# 47	*(67)*
Shading	2% Gray	Ec*c2G	*(g)*	027 042 099 050 071	*(103)*	1B 2A 63 32 47	*(67)*
	10% Gray	Ec*c10G	*(g)*	027 042 099 049 048 071	*(103)*	1B 2A 63 31 30 47	*(67)*
	15% Gray	Ec*c15G	*(g)*	027 042 099 049 053 071	*(103)*	1B 2A 63 31 35 47	*(67)*
	30% Gray	Ec*c30G	*(g)*	027 042 099 051 048 071	*(103)*	1B 2A 63 33 30 47	*(67)*
	45% Gray	Ec*c45G	*(g)*	027 042 099 052 053 071	*(103)*	1B 2A 63 34 35 47	*(67)*
	70% Gray	Ec*c70G	*(g)*	027 042 099 055 048 071	*(103)*	1B 2A 63 37 30 47	*(67)*
	90% Gray	Ec*c90G	*(g)*	027 042 099 057 048 071	*(103)*	1B 2A 63 39 30 47	*(67)*
	100% Gray	Ec*c100G	*(g)*	027 042 099 049 048 048 071	*(103)*	1B 2A 6 331 30 30 47	*(67)*
Pattern	1 Horiz.Line	Ec*c1G	*(g)*	027 042 099 049 071	*(103)*	1B 2A 63 31 47	*(67)*
	2 Vert. Lines	Ec*c2G	*(g)*	027 042 099 050 071	*(103)*	1B 2A 63 32 47	*(67)*
	3 Diagonal Lines	Ec*c3G	*(g)*	027 042 099 051 071	*(103)*	1B 2A 63 33 47	*(67)*
	4 Diagonal Lines	Ec*c4G	*(g)*	027 042 099 052 071	*(103)*	1B 2A 63 34 47	*(67)*
	5 Square Grid	Ec*c5G	*(g)*	027 042 099 053 071	*(103)*	1B 2A 63 35 47	*(67)*
	6 Diagonal Grid	Ec*c6G	*(g)*	027 042 099 054 071	*(103)*	1B 2A 63 36 47	*(67)*

Values in the parentheses "(x)" identify the lower case of the termination character. This value is used if the printer command is combined.

Table A-1.LaserJet IIIP Printer Commands - PCL*(Cont.)*

FUNCTION	PARAMETER	COMMAND	DECIMAL VALUE	HEXADECIMAL VALUE
USER DEFINED PATTERN / MANAGEMENT CREATION				
Define Pattern	# of bytes	Ec*c# W [data]	027 042 099 #...# 087	1B 2A 63 031 51
User-defined Pattern Control	Delete all patterns	Ec*c# 0 Q	027 042 099 048 081 *(113)*	1B 2A 63 032 51 *(71)*
	Delete all temporary patterns	Ec*c# 1Q	027 042 099 049 081 *(113)*	1B 2A 63 031 51 *(71)*
	Delete current pattern	Ec*c# 2Q	027 042 099 050 081 *(113)*	
	Make pattern temporary	Ec*c# 4Q	027 042 099 052 081 *(113)*	1B 2A 63 034 51 *(71)*
	Make pattern permanent	Ec*c# 5Q	027 042 099 053 081 *(113)*	1B 2A 63 034 51 *(71)*
Set Pattern Reference Point	Rotate with orientation	Ec*p0R	027 042 112 048 082 *(114)*	1B 2A 70 30 52 *(72)*
	Follow physical page	Ec*p1 R	027 042 112 049 082 *(114)*	1B 2A 70 31 52 *(72)*
MACROS				
Macro ID	Macro ID #	Ec&f# Y *(y)*	027 038 102 #...# 089 *(121)*	1B 26 66 #...# 59 *(79)*
Macro Control	Start Macro Def.	Ec&f0X *(x)*	027 038 102 048 088 *(120)*	1B 26 66 30 58 *(78)*
	Stop Macro Def.	Ec&f1X *(x)*	027 038 102 049 088 *(120)*	1B 26 66 31 58 *(78)*
	Execute Macro	Ec&f2X *(x)*	027 038 102 050 088 *(120)*	1B 26 66 32 58 *(78)*
	Call Macro	Ec&f3X *(x)*	027 038 102 051 088 *(120)*	1B 26 66 33 58 *(78)*
	Enable Overlay	Ec&f4X *(x)*	027 038 102 052 088 *(120)*	1B 26 66 34 58 *(78)*
	Disable Overlay	Ec&f5X *(x)*	027 038 102 053 088 *(120)*	1B 26 66 35 58 *(78)*
	Delete Macros	Ec&f6X *(x)*	027 038 102 054 088 *(120)*	1B 26 66 36 58 *(78)*
	Delete All Temp. Macros	Ec&f7X *(x)*	027 038 102 055 088 *(120)*	1B 26 66 37 58 *(78)*
	Delete Macro ID	Ec&f8X *(x)*	027 038 102 056 088 *(120)*	1B 26 66 38 58 *(78)*
	Make Temporary	Ec&f9X *(x)*	027 038 102 057 088 *(120)*	1B 26 66 39 58 *(78)*
	Make Permanent	Ec&f10X *(x)*	027 038 102 049 048 088 *(120)*	1B 26 66 31 30 58 *(78)*
PROGRAMMING HINTS				
End-of-Line Wrap	Enabled	Ec&s0C *(c)*	027 038 115 048 067 *(99)*	1B 26 73 30 43 *(63)*
	Disabled	Ec&s1C *(c)*	027 038 115 049 067 *(99)*	1B 26 73 31 43 *(63)*
Display Functions	ON	EcY	027 089	1B 59
	OFF	EcZ	027 090	1B 5A

Values in the parentheses "(x)" identify the lower case of the termination character. This value is used if the printer command is combined.

Table A-2. HP LaserJet IIIP Printer Commands — HP-GL/2 Context

COMMAND	MNEMONIC	PARAMETERS*
DUAL CONTEXT EXTENSIONS		
ENTER PCL MODE	Esc%#A	0 – Retain previous PCL cursor position 1 – Use current HP-GL/2 pen position
RESET	EscE	None
PRIMARY FONT	FI	Font_ID
SECONDARY FONT	FN	Font_ID
SCALABLE OR BITMAPPED FONTS	SB	0 - Scalable fonts only 1 - Bitmapped fonts allowed
PALETTE EXTENSIONS		
TRANSPARENCY MODE	TR	0 - Off (opaque) 1 - On (transparent)
SCREENED VECTORS	SV	[screen_type[,shading[,index]]]
VECTOR GROUP *Parameters in brackets are optional.		
ARC ABSOLUTE	AA	x_center,y_center,sweep_angle [,chord_angle];
ARC RELATIVE	AR	x_increment,y_increment,sweep_angle [,chord_angle];
ABSOLUTE ARC THREE POINT	AT	x_inter,y_inter,x_end,y_end [,chord_angle];
PLOT ABSOLUTE	PA	[x,y ... [,x,y]];
PLOT RELATIVE	PR	[x,y ... [,x,y]];
PEN DOWN	PD	[x,y ... [,x,y]];
PEN UP	PU	[x,y ... [,x,y]];
RELATIVE ARC THREE POINT	RT	x_incr_inter,y_incr_inter,x_incr_end,y_incr-end [,chord_angle];
POLYLINE ENCODED	PE	[flag[val]|coord_pair ... [flag[val]|coord_pair]];

Table A-2.
LaserJet IIIP Printer Commands-HP-GL/2 Context*(cont'd)*

COMMAND	MNEMONIC	PARAMETERS*
POLYGON GROUP ***Parameters in brackets are optional.**		
CIRCLE	CI	radius [,chord_angle];
FILL RECTANGLE ABSOLUTE	RA	x_coordinate,y_coordinate;
FILL RECTANGLE RELATIVE	RR	x_increment,y_increment;
EDGE RECTANGLE ABSOLUTE	EA	x_coordinate,y_coordinate;
EDGE RECTANGLE RELATIVE	ER	x_increment,y_increment;
FILL WEDGE	WG	radius,start_angle,sweep_angle[,chord_angle];
EDGE WEDGE	EW	radius,start_angle,sweep_angle[,chord_angle];
POLYGON MODE	PM	polygon_definition;
FILL POLYGON	FP	
EDGE POLYGON	EP	

Table A-2.
LaserJet IIIP Printer Commands-HP-GL/2 Context*(cont'd)*

COMMAND	MNEMONIC	PARAMETERS*
CHARACTER GROUP *Parameters in brackets are optional.		
SELECT STANDARD FONT	SS	
SELECT ALTERNATE FONT	SA	
ABSOLUTE DIRECTION	DI	[run,rise];
RELATIVE DIRECTION	DR	[run,rise];
ABSOLUTE CHARACTER SIZE	SI	[width,height];
RELATIVE CHARACTER SIZE	SR	[width,height];
CHARACTER SLANT	SL	[tangent_of_angle];
EXTRA SPACE	ES	[width[,height]]
STANDARD FONT DEFINITION	SD	[kind,value ... [,kind,value]];
ALTERNATE FONT DEFINITION	AD	[kind,value ... [,kind,value]];
CHARACTER FILL MODE	CF	[fill_mode[,edge_pen]];
LABEL ORIGIN	LO	[position];
LABEL	LB	[char ... [char]]1bterm
DEFINE LABEL TERMINATOR	DT	[1bterm[,mode]];
CHARACTER PLOT	CP	[spaces,lines];
TRANSPARENT DATA	TD	[mode];
DEFINE VARIABLE TEXT PATH	DV	[path[,line]];

Table A-2.
LaserJet IIIP Printer Commands-HP-GL/2 Context*(cont'd)*

COMMAND	MNEMONIC	PARAMETERS*
LINE AND FILL ATTIBUTES GROUP *Parameters in brackets are optional.		
LINE TYPE	LT	[line_type[,pattern_length[,mode]]];
LINE ATTRIBUTES	LA	[kind,value ... [,kind,value]];
PEN WIDTH	PW	[width[,pen]];
PEN WIDTH UNIT SELECTION	WU	[type];
SELECT PEN	SP	[pen]; *(required, 1 for black (recommended) or 0 for white)*
SYMBOL MODE	SM	[char];
FILL TYPE	FT	[fill_type[,option1[,option2]]];
ANCHOR CORNER	AC	[x_coordinate,y_coordinate];
RASTER FILL DEFINITION	RF	[index[,width,height,pen_nbr ... pen_nbr]]; *(width and height must be less than 255)*
USER DEFINED LINE TYPE	UL	[index[,gap1 ... gapn]];
CONFIGURATION AND STATUS GROUP *Parameters in brackets are optional.		
SCALE	SC	[x1,x2,y1,y2[,type[,left,bottom]]]; or [x1,xfactor,y1,yfactor,2];
INPUT WINDOW	IW	[xLL,yLL,xUR,yUR];
INPUT P1 AND P2	IP	[p1x,p1y[,p2x,p2y]];
INPUT RELATIVE P1 AND P2	IR	[p1x,p1y[,p2x,p2y]];
DEFAULT VALUES	DF	
INITIALIZE	IN	[n];
ROTATE COORDINATE SYSTEM	RO	[angle];

B

Symbol Sets

Symbol Set Tables

Symbol sets are unique groupings of characters designed to match the requirements of software applications, specific languages and occupations. To help you choose and use the proper symbol set, this appendix contains:

- The control panel display names and PCL language values for symbol sets.
- The individual symbol set tables showing character locations and ASCII character code positions.
- A substitution table for accessing ISO symbols from the Roman-8 symbol set.
- Information about special control codes to be used with symbol sets.
- Conversion tables for hexadecimal, decimal and octal characters.

Shaded Areas

The gray shaded areas in these tables denote printer control code areas. Math composite characters are shown with light-colored shades, and line-draw composite characters are shown with dark-colored shades. Composite characters are made by combining individual character elements into a large character. Refer to your computer or software manuals for information on printing the characters shown in the right half of the tables (code numbers 128-255).

The International Standards Organization (ISO) symbol sets and the HP German and HP Spanish symbol sets are represented by a character substitution table based on the Roman-8 symbol set (see page B-13).

Software Support

Although all of the characters and symbols shown on these charts are printable, your software might not support some of them. Check your software manual to see which symbol sets are supported.

Control Panel Display and PCL Symbol Set Values

Tables B-1 and B-2 are provided to help you select symbol sets using the HP LaserJet IIIP printer's control panel or through your software application using PCL language printer commands.

Table B-1.
Internal Symbol Sets
(Scalable Typefaces and Bitmapped Fonts)

Symbol Set	Control Panel Display	PCL Symbol Set ID
Roman-8	ROMAN-8	8U
ECMA-94 Latin 1	EC94-L1	0N
PC-8	PC-8	10U
Danish/Norwegian	PC-8 DN	11U
PC-850	PC-850	12U
Legal	LEGAL	1U
ISO IRV*	ISO 2	2U
ISO United Kingdom*	ISO 4	1E
ASCII*	ISO 6	0U
ISO Swedish/Finnish*	ISO 10	3S
ISO Swedish: names*	ISO 11	0S
JIS ASCII*	ISO 14	0K
ISO Italian*	ISO 15	0I

Table B-1.
Internal Symbol Sets
(Scalable Typefaces and Bitmapped Fonts)
(continued)

Symbol Set	Control Panel Display	PCL Symbol Set ID
ISO Portuguese*	ISO 16	4S
ISO Spanish*	ISO 17	2S
ISO German*	ISO 21	1G
ISO French*	ISO 25	0F
ISO Chinese*	ISO 57	2K
ISO Norwegian v1*	ISO 60	0D
ISO Norwegian v2*	ISO 61	1D
ISO French*	ISO 69	1F
ISO Portuguese*	ISO 84	5S
ISO Spanish*	ISO 85	6S
HP German*	GERMAN	0G
HP Spanish*	SPANISH	1S

* These symbol sets represent a variation of characters from the Roman-8 symbol set (see page B-13).

Table B-2.
Internal Symbol Sets
(Scalable Typefaces Only)

Symbol Set	Control Panel Display	PCL Symbol Set ID
Ventura Math	VN MATH	6M
Ventura International	VN INTL	13J
Ventura US	VN US	14J
PS Math	PS MATH	5M
PS Text	PS TEXT	10J
Math-8	MATH-8	8M
Pi Font	PI FONT	15U
Microsoft Publishing	MS PUBL	6J
Windows	WINDOWS	9U
DeskTop	DESKTOP	7J

Note

Other symbol sets are available with optional type products (such as ITC Zapf Dingbats).

ECMA-94 Latin 1 Symbol Set

NUL 0	DLE 16	32	0 48	@ 64	P 80	` 96	p 112	128	144	160	° 176	À 192	Ð 208	à 224	ð 240
SOH 1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	145	¡ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
STX 2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	130	146	¢ 162	² 178	Â 194	Ò 210	â 226	ò 242
ETX 3	DC3 19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	£ 163	³ 179	Ã 195	Ó 211	ã 227	ó 243
EOT 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	148	¤ 164	´ 180	Ä 196	Ô 212	ä 228	ô 244
ENQ 5	NAK 21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	¥ 165	µ 181	Å 197	Õ 213	å 229	õ 245
ACK 6	SYN 22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	¦ 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
BEL 7	ETB 23	' 39	7 55	G 71	W 87	g 103	w 119	135	151	§ 167	· 183	Ç 199	× 215	ç 231	÷ 247
BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	136	152	¨ 168	¸ 184	È 200	Ø 216	è 232	ø 248
HT 9	EM 25	) 41	9 57	I 73	Y 89	i 105	y 121	137	153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
LF 10	SUB 26	* 42	: 58	J 74	Z 90	j 106	z 122	138	154	ª 170	º 186	Ê 202	Ú 218	ê 234	ú 250
VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	139	155	« 171	» 187	Ë 203	Û 219	ë 235	û 251
FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	140	156	¬ 172	¼ 188	Ì 204	Ü 220	ì 236	ü 252
CR 13	GS 29	- 45	= 61	M 77	] 93	m 109	} 125	141	157	- 173	½ 189	Í 205	Ý 221	í 237	ý 253
SO 14	RS 30	. 46	> 62	N 78	^ 94	n 110	~ 126	142	158	® 174	¾ 190	Î 206	Þ 222	î 238	þ 254
SI 15	US 31	/ 47	? 63	O 79	_ 95	o 111	▩ 127	143	159	¯ 175	¿ 191	Ï 207	ß 223	ï 239	ÿ 255

DeskTop Symbol Set

NUL 0	DLE 16	32	0 48	@ 64	P 80	‘ 96	p 112	128	144	160	“ 176	— 192	‹ 208	ª 224	´ 240
SOH 1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	145	¶ 161	” 177	± 193	› 209	º 225	` 241
STX 2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	130	146	§ 162	µ 178	× 194	« 210	æ 226	ˆ 242
ETX 3	DC3 19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	† 163	‰ 179	÷ 195	» 211	Æ 227	¨ 243
EOT 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	148	‡ 164	• 180	° 196	‚ 212	ð 228	˜ 244
ENQ 5	NAK 21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	© 165	● 181	′ 197	„ 213	Đ 229	ˇ 245
ACK 6	SYN 22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	® 166	○ 182	″ 198	· 214	ĳ 230	˘ 246
BEL 7	ETB 23	’ 39	7 55	G 71	W 87	g 103	w 119	135	151	™ 167	○ 183	¼ 199	¡ 215	Ĳ 231	˝ 247
BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	136	152	℅ 168	■ 184	½ 200	¿ 216	ł 232	˚ 248
HT 9	EM 25	) 41	9 57	I 73	Y 89	i 105	y 121	137	153	¢ 169	■ 185	¾ 201	Pt 217	Ł 233	˙ 249
LF 10	SUB 26	* 42	: 58	J 74	Z 90	j 106	z 122	138	154	– 170	□ 186	¹ 202	ℓ 218	œ 234	¯ 250
VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	139	155	— 171	□ 187	² 203	£ 219	Œ 235	¸ 251
FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	140	156	… 172	' 188	³ 204	¥ 220	ø 236	˛ 252
CR 13	GS 29	- 45	= 61	M 77	] 93	m 109	} 125	141	157	ﬁ 173	¬ 189	/ 205	¤ 221	Ø 237	· 253
SO 14	RS 30	. 46	> 62	N 78	^ 94	n 110	~ 126	142	158	ﬂ 174	¦ 190	206	ƒ 222	þ 238	ı 254
SI 15	US 31	/ 47	? 63	O 79	_ 95	o 111	▩ 127	143	159	175	‗ 191	207	ß 223	Þ 239	255

Math-8 Symbol Set

NUL 0	DLE 16	32	0 48	∴ 64	Π 80	∵ 96	π 112	128	144	160	‾ 176	⊕ 192	Å 208	⎡ 224	⎤ 240
SOH 1	DC1 17	√ 33	1 49	A 65	P 81	α 97	ρ 113	129	145	↑ 161	∀ 177	⊙ 193	⊣ 209	⎣ 225	⎦ 241
STX 2	DC2 18	″ 34	2 50	B 66	Σ 82	β 98	σ 114	130	146	→ 162	∃ 178	⊗ 194	⊢ 210	⎛ 226	⎞ 242
ETX 3	DC3 19	° 35	3 51	Γ 67	T 83	γ 99	τ 115	131	147	↓ 163	⊤ 179	⊖ 195	∟ 211	⎨ 227	⎬ 243
EOT 4	DC4 20	∞ 36	4 52	Δ 68	Υ 84	δ 100	υ 116	132	148	← 164	⊥ 180	⊘ 196	϶ 212	⎝ 228	⎠ 244
ENQ 5	NAK 21	÷ 37	5 53	E 69	Φ 85	ϵ 101	ϕ 117	133	149	⇑ 165	∪ 181	∧ 197	∫ 213	⌠ 229	│ 245
ACK 6	SYN 22	∝ 38	6 54	Z 70	X 86	ζ 102	χ 118	134	150	⇒ 166	∩ 182	∨ 198	∮ 214	ϕ 230	│ 246
BEL 7	ETB 23	′ 39	7 55	H 71	Ψ 87	η 103	ψ 119	135	151	⇓ 167	∈ 183	⊻ 199	∠ 215	⌡ 231	↓ 247
BS 8	CAN 24	(40	8 56	Θ 72	Ω 88	θ 104	ω 120	136	152	⇐ 168	∋ 184	¬ 200	∅ 216	╲ 232	⌝ 248
HT 9	EM 25	) 41	9 57	I 73	∇ 89	ι 105	ϑ 121	137	153	↕ 169	∉ 185	∘ 201	ℵ 217	‖ 233	⟩ 249
LF 10	SUB 26	× 42	e 58	K 74	∂ 90	κ 106	φ 122	138	154	↔ 170	⊂ 186	· 202	ℶ 218	∠ 234	⌟ 250
VT 11	ESC 27	+ 43	ε 59	Λ 75	ς 91	λ 107	ϖ 123	139	155	⇕ 171	⊃ 187	• 203	ℷ 219	╱ 235	╲ 251
FF 12	FS 28	, 44	< 60	M 76	≤ 92	μ 108	≃ 124	140	156	⇔ 172	⊄ 188	● 204	ℭ 220	— 236	⟨ 252
CR 13	GS 29	− 45	= 61	N 77	≠ 93	ν 109	≡ 125	141	157	⇄ 173	⊅ 189	○ 205	ℑ 221	= 237	∓ 253
SO 14	RS 30	. 46	> 62	Ξ 78	≥ 94	ξ 110	≢ 126	142	158	⇆ 174	⊆ 190	† 206	ℜ 222	* 238	± 254
SI 15	US 31	/ 47	≈ 63	O 79	_ 95	ο 111	▩ 127	143	159	‾ 175	⊇ 191	‡ 207	ℨ 223	≅ 239	255

Legal Symbol Set

NUL 0	DLE 16	32	0 48	@ 64	P 80	° 96	p 112	128	144	160	176	192	208	224	240
SOH 1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	145	161	177	193	209	225	241
STX 2	DC2 18	″ 34	2 50	B 66	R 82	b 98	r 114	130	146	162	178	194	210	226	242
ETX 3	DC3 19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	163	179	195	211	227	243
EOT 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	148	164	180	196	212	228	244
ENQ 5	NAK 21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	165	181	197	213	229	245
ACK 6	SYN 22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	166	182	198	214	230	246
BEL 7	ETB 23	′ 39	7 55	G 71	W 87	g 103	w 119	135	151	167	183	199	215	231	247
BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	136	152	168	184	200	216	232	248
HT 9	EM 25	) 41	9 57	I 73	Y 89	i 105	y 121	137	153	169	185	201	217	233	249
LF 10	SUB 26	* 42	: 58	J 74	Z 90	j 106	z 122	138	154	170	186	202	218	234	250
VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	§ 123	139	155	171	187	203	219	235	251
FF 12	FS 28	, 44	‗ 60	L 76	® 92	l 108	¶ 124	140	156	172	188	204	220	236	252
CR 13	GS 29	- 45	= 61	M 77	] 93	m 109	† 125	141	157	173	189	205	221	237	253
SO 14	RS 30	. 46	¢ 62	N 78	© 94	n 110	™ 126	142	158	174	190	206	222	238	254
SI 15	US 31	/ 47	? 63	O 79	_ 95	o 111	▩ 127	143	159	175	191	207	223	239	255

PC-8 D/N (Danish/Norwegian) Symbol Set

NUL 0	► 16	32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	░ 176	└ 192	╨ 208	α 224	≡ 240
☺ 1	◄ 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
☻ 2	↕ 18	" 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242
♥ 3	‼ 19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
♦ 4	¶ 20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
♣ 5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
♠ 6	▬ 22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	õ 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
• 7	↨ 23	' 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	Õ 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
◘ 8	↑ 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
○ 9	↓ 25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ö 153	ã 169	╣ 185	╔ 201	┘ 217	Θ 233	· 249
◙ 10	→ 26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	Ã 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
♂ 11	← 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	ø 155	ℓ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
♀ 12	∟ 28	, 44	< 60	L 76	\ 92	l 108	| 124	î 140	£ 156	ŉ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
♪ 13	↔ 29	- 45	= 61	M 77	] 93	m 109	} 125	ì 141	Ø 157	¡ 173	╜ 189	═ 205	▌ 221	φ 237	² 253
♫ 14	▲ 30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ä 142	Ŀ 158	³ 174	╛ 190	╬ 206	▐ 222	ϵ 238	■ 254
☼ 15	▼ 31	/ 47	? 63	O 79	_ 95	o 111	⌂ 127	Å 143	ŀ 159	¤ 175	┐ 191	╧ 207	▀ 223	∩ 239	255

Microsoft Publishing Symbol Set

NUL 0	16	32	48	2 64	80	‘ 96	112	128	144	160	◦ 176	192	208	Ω 224	240
1	17	1 33	49	65	81	97	113	129	145	′ 161	• 177	` 193	` 209	225	241
2	18	” 34	50	66	℞ 82	98	114	130	146	″ 162	● 178	´ 194	´ 210	226	242
3	19	3 35	51	67	Š 83	℅ 99	š 115	131	147	^ 163	● 179	^ 195	^ 211	227	243
4	20	4 36	52	68	™ 84	100	Thin Space 116	132	148	∼ 164	○ 180	~ 196	~ 212	228	244
5	21	5 37	53	69	85	101	117	133	149	165	○ 181	¯ 197	¯ 213	229	ı 245
6	22	7 38	54	70	86	102	118	134	150	166	◯ 182	˘ 198	˘ 214	Ĳ 230	ĳ 246
BEL 7	23	’ 39	55	71	87	103	119	135	151	167	▪ 183	˙ 199	˙ 215	Ŀ 231	ŀ 247
BS 8	24	9 40	56	72	88	104	120	136	152	168	■ 184	¨ 200	¨ 216	Ł 232	ł 248
HT 9	25	0 41	57	73	Ÿ 89	105	121	137	153	ﬁ 169	■ 185	201	217	233	249
LF 10	26	8 42	58	74	Ž 90	106	ž 122	138	154	ﬂ 170	▫ 186	˚ 202	˚ 218	234	250
VT 11	ESC 27	† 43	59	75	91	107	123	139	155	ﬀ 171	□ 187	¸ 203	¸ 219	235	251
FF 12	28	, 44	„ 60	76	92	ℓ 108	124	140	156	ﬃ 172	□ 188	204	220	236	252
CR 13	29	— 45	‡ 61	— 77	93	Em Space 109	125	141	157	ﬄ 173	‰ 189	˝ 205	˝ 221	237	253
SO 14	30	… 46	62	– 78	6 94	En Space 110	“ 126	142	Pt 158	‹ 174	◆ 190	˛ 206	˛ 222	238	254
SI 15	31	/ 47	63	Œ 79	‗ 95	œ 111	127	143	ƒ 159	› 175	◇ 191	ˇ 207	ˇ 223	ŉ 239	255

PC-850 Symbol Set

NUL 0	► 16	32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	░ 176	└ 192	ð 208	Ó 224	- 240
☺ 1	◄ 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▒ 177	┴ 193	Ð 209	ß 225	± 241
☻ 2	↕ 18	" 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	▓ 178	┬ 194	Ê 210	Ô 226	‗ 242
♥ 3	‼ 19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	¾ 243
♦ 4	¶ 20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244
♣ 5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	Á 181	┼ 197	ı 213	Õ 229	§ 245
♠ 6	▬ 22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246
● 7	↨ 23	' 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
◘ 8	↑ 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248
○ 9	↓ 25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
◙ 10	→ 26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250
♂ 11	← 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	ø 155	½ 171	╗ 187	╦ 203	█ 219	Ù 235	¹ 251
♀ 12	∟ 28	, 44	< 60	L 76	\ 92	l 108	| 124	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	ý 236	³ 252
♪ 13	↔ 29	- 45	= 61	M 77	] 93	m 109	} 125	ì 141	Ø 157	¡ 173	¢ 189	═ 205	¦ 221	Ý 237	² 253
♫ 14	▲ 30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ä 142	× 158	« 174	¥ 190	╬ 206	Ì 222	¯ 238	■ 254
☼ 15	▼ 31	/ 47	? 63	O 79	_ 95	o 111	⌂ 127	Å 143	ƒ 159	» 175	┐ 191	¤ 207	▀ 223	´ 239	255

PC-8 Symbol Set

NUL 0	► 16	32	0 48	@ 64	P 80	` 96	p 112	Ç 128	É 144	á 160	░ 176	└ 192	╨ 208	α 224	≡ 240
☺ 1	◄ 17	! 33	1 49	A 65	Q 81	a 97	q 113	ü 129	æ 145	í 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
☻ 2	↕ 18	" 34	2 50	B 66	R 82	b 98	r 114	é 130	Æ 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242
♥ 3	‼ 19	# 35	3 51	C 67	S 83	c 99	s 115	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
♦ 4	¶ 20	$ 36	4 52	D 68	T 84	d 100	t 116	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
♣ 5	§ 21	% 37	5 53	E 69	U 85	e 101	u 117	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
♠ 6	▬ 22	& 38	6 54	F 70	V 86	f 102	v 118	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
● 7	↨ 23	' 39	7 55	G 71	W 87	g 103	w 119	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
◘ 8	↑ 24	(40	8 56	H 72	X 88	h 104	x 120	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
○ 9	↓ 25	) 41	9 57	I 73	Y 89	i 105	y 121	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	· 249
◙ 10	→ 26	* 42	: 58	J 74	Z 90	j 106	z 122	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
♂ 11	← 27	+ 43	; 59	K 75	[91	k 107	{ 123	ï 139	¢ 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
♀ 12	∟ 28	, 44	< 60	L 76	\ 92	l 108	| 124	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
♪ 13	↔ 29	- 45	= 61	M 77	] 93	m 109	} 125	ì 141	¥ 157	¡ 173	╜ 189	═ 205	▌ 221	φ 237	² 253
♫ 14	▲ 30	. 46	> 62	N 78	^ 94	n 110	~ 126	Ä 142	Pt 158	« 174	╛ 190	╬ 206	▐ 222	ε 238	■ 254
☼ 15	▼ 31	/ 47	? 63	O 79	_ 95	o 111	⌂ 127	Å 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	255

PS Math Symbol Set

NUL 0	DLE 16	32	0 48	≅ 64	Π 80	‾ 96	π 112	128	144	160	° 176	ℵ 192	∠ 208	◇ 224	240
SOH 1	DC1 17	! 33	1 49	Α 65	Θ 81	α 97	θ 113	129	145	ϒ 161	± 177	ℑ 193	∇ 209	〈 225	〉 241
STX 2	DC2 18	∀ 34	2 50	Β 66	Ρ 82	β 98	ρ 114	130	146	′ 162	″ 178	ℜ 194	® 210	® 226	∫ 242
ETX 3	DC3 19	# 35	3 51	Χ 67	Σ 83	χ 99	σ 115	131	147	≤ 163	≥ 179	℘ 195	© 211	© 227	⌠ 243
EOT 4	DC4 20	∃ 36	4 52	Δ 68	Τ 84	δ 100	τ 116	132	148	/ 164	× 180	⊗ 196	TM 212	TM 228	⎮ 244
ENQ 5	NAK 21	% 37	5 53	Ε 69	Υ 85	ε 101	υ 117	133	149	∞ 165	∝ 181	⊕ 197	∏ 213	∑ 229	⌡ 245
ACK 6	SYN 22	& 38	6 54	Φ 70	ς 86	ϕ 102	ϖ 118	134	150	ƒ 166	∂ 182	∅ 198	√ 214	⎛ 230	⎞ 246
BEL 7	ETB 23	∍ 39	7 55	Γ 71	Ω 87	γ 103	ω 119	135	151	♣ 167	• 183	∩ 199	· 215	⎜ 231	⎟ 247
BS 8	CAN 24	(40	8 56	Η 72	Ξ 88	η 104	ξ 120	136	152	♦ 168	÷ 184	∪ 200	¬ 216	⎝ 232	⎠ 248
HT 9	EM 25	) 41	9 57	Ι 73	Ψ 89	ι 105	ψ 121	137	153	♥ 169	≠ 185	⊃ 201	∧ 217	⎡ 233	⎤ 249
LF 10	SUB 26	* 42	: 58	ϑ 74	Ζ 90	φ 106	ζ 122	138	154	♠ 170	≡ 186	⊇ 202	∨ 218	⎢ 234	⎥ 250
VT 11	ESC 27	+ 43	; 59	Κ 75	[91	κ 107	{ 123	139	155	↔ 171	≈ 187	⊄ 203	⇔ 219	⎣ 235	⎦ 251
FF 12	FS 28	, 44	< 60	Λ 76	∴ 92	λ 108	| 124	140	156	← 172	… 188	⊂ 204	⇐ 220	⎧ 236	⎫ 252
CR 13	GS 29	− 45	= 61	Μ 77	] 93	μ 109	} 125	141	157	↑ 173	| 189	⊆ 205	⇑ 221	⎨ 237	⎬ 253
SO 14	RS 30	. 46	> 62	Ν 78	⊥ 94	ν 110	~ 126	142	158	→ 174	⎯ 190	∈ 206	⇒ 222	⎩ 238	⎭ 254
SI 15	US 31	/ 47	? 63	Ο 79	_ 96	ο 111	127	143	159	↓ 175	↵ 191	∉ 207	⇓ 223	⎪ 239	255

Pi Font Symbol Set

NUL 0	DLE 16	32	¯ 48	∷ 64	𝒫 80	┌ 96	┐ 112	128	144	160	176	192	208	224	240
SOH 1	DC1 17	33	˘ 49	Δ̲ 65	℘ 81	└ 97	┘ 113	129	145	161	177	193	209	225	241
STX 2	DC2 18	„ 34	ˇ 50	66	℞ 82	╭ 98	╮ 114	130	146	162	178	194	210	226	242
ETX 3	DC3 19	‚ 35	˙ 51	67	∑ 83	╰ 99	╯ 115	131	147	163	179	195	211	227	243
EOT 4	DC4 20	“ 36	↗ 52	68	84	┼ 100	┬ 116	132	148	164	180	196	212	228	244
ENQ 5	NAK 21	” 37	↘ 53	69	85	├ 101	┤ 117	133	149	165	181	197	213	229	245
ACK 6	SYN 22	‘ 38	↙ 54	ℱ 70	86	─ 102	┴ 118	134	150	166	182	198	214	230	246
BEL 7	ETB 23	’ 39	↖ 55	71	87	‖ 103	│ 119	135	151	167	183	199	215	231	247
BS 8	CAN 24	〈 40	△ 56	ℏ 72	88	∪ 104	⊔ 120	136	152	168	184	200	216	232	248
HT 9	EM 25	〉 41	▷ 57	73	89	∩ 105	⊓ 121	137	153	169	185	201	217	233	249
LF 10	SUB 26	TM 42	▽ 58	74	90	╓ 106	╖ 122	138	154	170	186	202	218	234	250
VT 11	ESC 27	SM 43	◁ 59	75	⟦ 91	╙ 107	╜ 123	139	155	171	187	203	219	235	251
FF 12	FS 28	® 44	⋘ 60	ℒ 76	‖ 92	□ 108	■ 124	140	156	172	188	204	220	236	252
CR 13	GS 29	© 45	§ 61	ℓ 77	⟧ 93	◇ 109	◆ 125	141	157	173	189	205	221	237	253
SO 14	RS 30	Ⓜ 46	⋙ 62	78	‹ 94	110	126	142	158	174	190	206	222	238	254
SI 15	US 31	47	¶ 63	79	› 95	111	▩ 127	143	159	175	191	207	223	239	255

Roman-8 Symbol Set

Includes ASCII and Roman Extension Symbol Sets

NUL 0	DLE 16	32	0 48	@ 64	P 80	‘ 96	p 112	128	144	160	‾ 176	â 192	Å 208	Á 224	Þ 240
SOH 1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	145	À 161	Ý 177	ê 193	î 209	Ã 225	þ 241
STX 2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	130	146	Â 162	ý 178	ô 194	Ø 210	ã 226	· 242
ETX 3	DC3 19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	È 163	° 179	û 195	Æ 211	Đ 227	μ 243
EOT 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	148	Ê 164	Ç 180	á 196	å 212	ð 228	¶ 244
ENQ 5	NAK 21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	Ë 165	ç 181	é 197	í 213	Í 229	¾ 245
ACK 6	SYN 22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	Î 166	Ñ 182	ó 198	ø 214	Ì 230	— 246
BEL 7	ETB 23	’ 39	7 55	G 71	W 87	g 103	w 119	135	151	Ï 167	ñ 183	ú 199	æ 215	Ó 231	¼ 247
BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	136	152	´ 168	¡ 184	à 200	Ä 216	Ò 232	½ 248
HT 9	EM 25	) 41	9 57	I 73	Y 89	i 105	y 121	137	153	` 169	¿ 185	è 201	ì 217	Õ 233	ª 249
LF 10	SUB 26	* 42	: 58	J 74	Z 90	j 106	z 122	138	154	^ 170	¤ 186	ò 202	Ö 218	õ 234	º 250
VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	139	155	¨ 171	£ 187	ù 203	Ü 219	Š 235	« 251
FF 12	FS 28	, 44	< 60	L 76	\\ 92	l 108	| 124	140	156	~ 172	¥ 188	ä 204	É 220	š 236	■ 252
CR 13	GS 29	- 45	= 61	M 77	] 93	m 109	} 125	141	157	Ù 173	§ 189	ë 205	ï 221	Ú 237	» 253
SO 14	RS 30	. 46	> 62	N 78	^ 94	n 110	~ 126	142	158	Û 174	ƒ 190	ö 206	ß 222	Ÿ 238	± 254
SI 15	US 31	/ 47	? 63	O 79	_ 95	o 111	▩ 127	143	159	£ 175	¢ 191	ü 207	Ô 223	ÿ 239	255

Characters 0 through 127 represent the ASCII symbol set. Characters 161 through 255 represent the Roman Extention symbol set. ISO symbol sets are based on a variation of the characters in the Roman-8 symbol set - see B-13.

PS Text Symbol Set

NUL 0	DLE 16	32	0 48	@ 64	P 80	‘ 96	p 112	128	144	160	176	192	— 208	224	240
SOH 1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	145	¡ 161	– 177	` 193	209	Æ 225	æ 241
STX 2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	130	146	¢ 162	† 178	´ 194	210	226	242
ETX 3	DC3 19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	£ 163	‡ 179	^ 195	211	ª 227	243
EOT 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	148	/ 164	· 180	~ 196	212	228	244
ENQ 5	NAK 21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	¥ 165	181	¯ 197	213	229	ı 245
ACK 6	SYN 22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	ƒ 166	¶ 182	˘ 198	214	230	246
BEL 7	ETB 23	’ 39	7 55	G 71	W 87	g 103	w 119	135	151	§ 167	• 183	˙ 199	215	231	247
BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	136	152	¤ 168	‚ 184	¨ 200	216	Ł 232	ł 248
HT 9	EM 25	) 41	9 57	I 73	Y 89	i 105	y 121	137	153	' 169	„ 185	201	217	Ø 233	ø 249
LF 10	SUB 26	* 42	: 58	J 74	Z 90	j 106	z 122	138	154	“ 170	” 186	˚ 202	218	Œ 234	œ 250
VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	139	155	« 171	» 187	¸ 203	219	º 235	ß 251
FF 12	FS 28	, 44	< 60	L 76	\\ 92	l 108	| 124	140	156	‹ 172	… 188	204	220	236	252
CR 13	GS 29	- 45	= 61	M 77	] 93	m 109	} 125	141	157	› 173	‰ 189	˝ 205	221	237	253
SO 14	RS 30	. 46	> 62	N 78	^ 94	n 110	~ 126	142	158	ﬁ 174	190	˛ 206	222	238	254
SI 15	US 31	/ 47	? 63	O 79	_ 95	o 111	127	143	159	ﬂ 175	¿ 191	ˇ 207	223	239	255

Ventura International Symbol Set*

NUL 0	DLE 16	32	0 48	@ 64	P 80	‘ 96	p 112	128	144	„ 160	‰ 176	â 192	Å 208	Á 224	Œ 240
SOH 1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	145	À 161	“ 177	ê 193	î 209	Ã 225	œ 241
STX 2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	130	146	Â 162	” 178	ô 194	Ø 210	ã 226	¶ 242
ETX 3	DC3 19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	È 163	° 179	û 195	Æ 211	227	† 243
EOT 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	148	Ê 164	Ç 180	á 196	å 212	228	‡ 244
ENQ 5	NAK 21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	Ë 165	ç 181	é 197	í 213	Í 229	— 245
ACK 6	SYN 22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	Î 166	Ñ 182	ó 198	ø 214	Ì 230	– 246
BEL 7	ETB 23	’ 39	7 55	G 71	W 87	g 103	w 119	135	151	Ï 167	ñ 183	ú 199	æ 215	Ó 231	247
BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	136	152	© 168	¡ 184	à 200	Ä 216	Ò 232	248
HT 9	EM 25	) 41	9 57	I 73	Y 89	i 105	y 121	137	153	® 169	¿ 185	è 201	ì 217	Õ 233	ª 249
LF 10	SUB 26	* 42	: 58	J 74	Z 90	j 106	z 122	138	154	™ 170	¤ 186	ð 202	Ö 218	õ 234	º 250
VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	139	155	‹ 171	£ 187	ù 203	Ü 219	Š 235	« 251
FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	140	156	› 172	¥ 188	ä 204	É 220	š 236	• 252
CR 13	GS 29	- 45	= 61	M 77	] 93	m 109	} 125	141	157	Ù 173	§ 189	ë 205	ï 221	Ú 237	» 253
SO 14	RS 30	. 46	> 62	N 78	^ 94	n 110	~ 126	142	158	Û 174	ƒ 190	ö 206	ß 222	Ÿ 238	254
SI 15	US 31	/ 47	? 63	O 79	_ 95	o 111	127	143	159	175	¢ 191	ü 207	Ô 223	ÿ 239	… 255

Ventura Math Symbol Set*

NUL 0	DLE 16	32	0 48	≅ 64	Π 80	‾ 96	π 112	128	144	◇ 160	® 176	≤ 192	↓ 208	⎜ 224	∏ 240
SOH 1	DC1 17	! 33	1 49	A 65	Θ 81	α 97	θ 113	129	145	√ 161	⊃ 177	◆ 193	← 209	· 225	™ 241
STX 2	DC2 18	∀ 34	2 50	B 66	P 82	β 98	ρ 114	130	146	⎝ 162	⊇ 178	≥ 194	® 210	∠ 226	⇐ 242
ETX 3	DC3 19	# 35	3 51	X 67	Σ 83	χ 99	σ 115	131	147	⎡ 163	⎧ 179	∂ 195	″ 211	⎭ 227	⇔ 243
EOT 4	DC4 20	∃ 36	4 52	Δ 68	T 84	δ 100	τ 116	132	148	⎢ 164	180	ℵ 196	ƒ 212	228	∨ 244
ENQ 5	NAK 21	% 37	5 53	E 69	Y 85	ε 101	υ 117	133	149	⎣ 165	♣ 181	′ 197	ℑ 213	⎨ 229	∑ 245
ACK 6	SYN 22	& 38	6 54	Φ 70	ς 86	ϕ 102	ϖ 118	134	150	⎩ 166	⊕ 182	ℜ 198	© 214	⎛ 230	™ 246
BEL 7	ETB 23	∍ 39	7 55	Γ 71	Ω 87	γ 103	ω 119	135	151	⎪ 167	⊗ 183	℘ 199	± 215	〉 231	⎥ 247
BS 8	CAN 24	(40	8 56	H 72	Ξ 88	η 104	ξ 120	136	152	⇑ 168	⊆ 184	∞ 200	→ 216	232	⎦ 248
HT 9	EM 25	) 41	9 57	I 73	Ψ 89	ι 105	ψ 121	137	153	⇒ 169	∪ 185	♠ 201	↑ 217	¬ 233	∅ 249
LF 10	SUB 26	* 42	: 58	ϑ 74	Z 90	φ 106	ζ 122	138	154	⇓ 170	⎯ 186	∝ 202	≠ 218	∇ 234	∩ 250
VT 11	ESC 27	+ 43	; 59	K 75	[91	κ 107	{ 123	139	155	⊄ 171	… 187	● 203	≡ 219	⌠ 235	∈ 251
FF 12	FS 28	, 44	< 60	Λ 76	∴ 92	λ 108	| 124	140	156	⊂ 172	∣ 188	/ 204	° 220	⎮ 236	© 252
CR 13	GS 29	− 45	= 61	M 77	] 93	μ 109	} 125	141	157	⎭ 173	∧ 189	♥ 205	↔ 221	⎞ 237	∉ 253
SO 14	RS 30	. 46	> 62	N 78	⊥ 94	ν 110	~ 126	142	158	⎪ 174	↵ 190	× 206	⎤ 222	⌡ 238	⎠ 254
SI 15	US 31	/ 47	? 63	O 79	_ 95	ο 111	127	143	159	⎬ 175	≈ 191	ϒ 207	∫ 223	÷ 239	〈 255

*This symbol set table displays the location of printer font characters. Ventura Publisher uses different locations for screen fonts. Refer to your software manual for more information about accessing screen characters.

Windows Symbol Set

NUL 0	16	32	0 48	@ 64	P 80	` 96	p 112	128	144	160	° 176	À 192	Ð 208	à 224	ð 240
1	17	! 33	1 49	A 65	Q 81	a 97	q 113	129	‘ 145	¡ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	18	" 34	2 50	B 66	R 82	b 98	r 114	130	’ 146	¢ 162	² 178	Â 194	Ò 210	â 226	ò 242
3	19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	£ 163	³ 179	Ã 195	Ó 211	ã 227	ó 243
4	20	$ 36	4 52	D 68	T 84	d 100	t 116	132	148	¤ 164	´ 180	Ä 196	Ô 212	ä 228	ô 244
5	21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	¥ 165	µ 181	Å 197	Õ 213	å 229	õ 245
6	22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	¦ 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
BEL 7	23	' 39	7 55	G 71	W 87	g 103	w 119	135	151	§ 167	· 183	Ç 199	× 215	ç 231	÷ 247
BS 8	24	(40	8 56	H 72	X 88	h 104	x 120	136	152	¨ 168	¸ 184	È 200	Ø 216	è 232	ø 248
HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121	137	153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122	138	154	ª 170	º 186	Ê 202	Ú 218	ê 234	ú 250
VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	139	155	« 171	» 187	Ë 203	Û 219	ë 235	û 251
FF 12	28	, 44	< 60	L 76	\ 92	l 108	| 124	140	156	¬ 172	¼ 188	Ì 204	Ü 220	ì 236	ü 252
CR 13	29	- 45	= 61	M 77	] 93	m 109	} 125	141	157	- 173	½ 189	Í 205	Ý 221	í 237	ý 253
SO 14	30	. 46	> 62	N 78	^ 94	n 110	~ 126	142	158	® 174	¾ 190	Î 206	Þ 222	î 238	þ 254
SI 15	31	/ 47	? 63	O 79	_ 95	o 111	▒ 127	143	159	¯ 175	¿ 191	Ï 207	ß 223	ï 239	ÿ 255

Ventura US Symbol Set*

NUL 0	DLE 16	32	0 48	@ 64	P 80	‘ 96	p 112	128	144	„ 160	‰ 176	192	208	224	240
SOH 1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113	129	145	161	“ 177	193	209	225	241
STX 2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114	130	146	162	” 178	194	210	226	¶ 242
ETX 3	DC3 19	# 35	3 51	C 67	S 83	c 99	s 115	131	147	163	° 179	195	211	227	† 243
EOT 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116	132	148	164	180	196	212	228	‡ 244
ENQ 5	NAK 21	% 37	5 53	E 69	U 85	e 101	u 117	133	149	165	181	197	213	229	— 245
ACK 6	SYN 22	& 38	6 54	F 70	V 86	f 102	v 118	134	150	166	182	198	214	230	– 246
BEL 7	ETB 23	’ 39	7 55	G 71	W 87	g 103	w 119	135	151	167	183	199	215	231	247
BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120	136	152	© 168	184	200	216	232	248
HT 9	EM 25	) 41	9 57	I 73	Y 89	i 105	y 121	137	153	® 169	185	201	217	233	249
LF 10	SUB 26	* 42	: 58	J 74	Z 90	j 106	z 122	138	154	™ 170	186	202	218	234	250
VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123	139	155	171	187	203	219	235	251
FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124	140	156	172	188	204	220	236	• 252
CR 13	GS 29	- 45	= 61	M 77	] 93	m 109	} 125	141	157	173	§ 189	205	221	237	253
SO 14	RS 30	. 46	> 62	N 78	^ 94	n 110	~ 126	142	158	174	190	206	222	238	254
SI 15	US 31	/ 47	? 63	O 79	_ 95	o 111	127	143	159	175	¢ 191	207	223	239	… 255

* This symbol set table displays the location of printer font characters. Ventura Publisher uses different locations for screen fonts. Refer to your software manual for more information about accessing screen characters.

ISO Substitution Table

This table provides a quick reference for the values of special characters contained in ISO (International Standards Organization) symbol sets. ISO symbol sets contain the same characters as the ASCII symbol set, except for the character positions listed in this table. For example, within the ISO 4 (United Kingdom) symbol set, the British pound sign (£) replaces the # sign used in decimal position 35 of the ASCII symbol set.

			Decimal Character Equivalents											
ISO	Name	ID	35	36	64	91	92	93	94	96	123	124	125	126
6	ASCII	0U	#	$	@	[	\	]	^	‘	{	|	}	~
4	United Kingdom	1E	£	$	@	[	\	]	^	`	{	|	}	‾
69	French	1F	£	$	à	°	ç	§	^	μ	é	ù	è	¨
21	German	1G	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
15	Italian	0I	£	$	§	°	ç	é	^	ù	à	ò	è	ì
11	Swedish for Names	0S	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
17	Spanish	2S	£	$	§	¡	Ñ	¿	^	`	°	ñ	ç	~
60	Norwegian version 1	0D	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	‾
2	Int'l. Ref. Version*	2U	#	¤	@	[	\	]	^	`	{	|	}	‾
25	French*	0F	£	$	à	°	ç	§	^	`	é	ù	è	¨
	German*	0G	£	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
14	JIS ASCII*	0K	#	$	@	[	¥	]	^	`	{	|	}	‾
57	Chinese*	2K	#	¥	@	[	\	]	^	`	{	|	}	‾
10	Swedish*	3S	#	¤	@	Ä	Ö	Å	^	`	ä	ö	å	‾
	Spanish*	1S	#	$	@	¡	Ñ	¿	°	`	{	ñ	}	~
85	Spanish*	6S	#	$	·	¡	Ñ	Ç	¿	`	´	ñ	ç	¨
16	Portuguese*	4S	#	$	§	Ã	Ç	Õ	^	`	ã	ç	õ	°
84	Portuguese*	5S	#	$	´	Ã	Ç	Õ	^	`	ã	ç	õ	~
61	Norwegian version 2*	1D	§	$	@	Æ	Ø	Å	^	`	æ	ø	å	|

* Not recommended for future use.

Control Codes

Many symbol sets contain a PCL language command called a *Control Code.* A control code is a special nonprintable mnemonic command that initiates a printer function. Definitions of a few of the widely used control codes are listed below. (For more information, refer to the *PCL 5 Printer Technical Reference Manual.*)

Backspace	$^{B}{}_{S}$	Move one column left unless at left margin in which case no action is taken.	Shift In	$^{S}{}_{I}$	Select characters that follow from the current primary font until receipt of a Shift Out.
Line Feed	$^{L}{}_{F}$	Move to next print line while maintaining current column position.	Escape	$^{E}{}_{C}$	Indicates the beginning of a special control sequence (escape sequence).
Form Feed	$^{F}{}_{F}$	Move to first line at top of the next page while maintaining current column position.	Horizontal Tab	$^{H}{}_{T}$	Move to next horizontal tab stop. The tab stops are at the left margin and at every eight columns to the right of the left margin.
Carriage Return	$^{C}{}_{R}$	Move to the left margin on current print line.	Space	$^{S}{}_{P}$	Move one column to the right unless at right margin in which case no action is taken.
Shift Out	$^{S}{}_{O}$	Select characters that follow from the current secondary font until receipt of a Shift In.			

Conversion Table

Table B-3 gives the hexadecimal, decimal, and octal equivalent of each character in the Roman-8 symbol set (see pages B-15 through 21). Use this table when your software requires you to enter hexadecimal, decimal, or octal values in place of printer command characters.

Table B-3. Roman-8 Character Conversion Table

Graphic	Hex	Dec	Oct	Description
	00	0	000	NUL (null)
	01	1	001	SOH (start of heading)
	02	2	002	STX (start of text)
	03	3	003	ETX (end of text)
	04	4	004	EOT (end of transmission)
	05	5	005	ENQ (enquiry)
	06	6	006	ACK (acknowledge)
	07	7	007	BEL (bell)
	08	8	010	BS (backspace)
	09	9	011	HT (horizontal tabulation)
	0A	10	012	LF (line feed)
	0B	11	013	VT (vertical tabulation)
	0C	12	014	FF (form feed)
	0D	13	015	CR (carriage return)
	0E	14	016	SO (shift out)
	0F	15	017	SI (shift in)
	10	16	020	DLE (data link escape)
	11	17	021	DC1 (device control 1 or X-ON)
	12	18	022	DC2 (device control 2)
	13	19	023	DC3 (device control 3 or X-OFF)
	14	20	024	DC4 (device control 4)
	15	21	025	NAK (negative acknowledge)
	16	22	026	SYN (synchronous idle)
	17	23	027	ETB (end of transmission block)
	18	24	030	CAN (cancel)
	19	25	031	EM (end of medium)
	1A	26	032	SUB (substitute)
	1B	27	033	ESC (escape)
	1C	28	034	FS (file separator)
	1D	29	035	GS (group separator)
	1E	30	036	RS (record separator)
	1F	31	037	US (unit separator)
	20	32	040	SP (space)
!	21	33	041	Exclamation point
"	22	34	042	Quotation mark
#	23	35	043	Number sign
$	24	36	044	Dollar sign
%	25	37	045	Percent sign
&	26	38	046	Ampersand
'	27	39	047	Closing single quote (apostrophe)

Table B-3. Roman-8 Character Conversion Table (continued)

Graphic	Hex	Dec	Oct	Description
(	28	40	050	Opening parenthesis
)	29	41	051	Closing parenthesis
*	2A	42	052	Asterisk
+	2B	43	053	Plus
,	2C	44	054	Comma
-	2D	45	055	Hyphen
.	2E	46	056	Period (point)
/	2F	47	057	Slant (solidus)
0	30	48	060	Zero
1	31	49	061	One
2	32	50	062	Two
3	33	51	063	Three
4	34	52	064	Four
5	35	53	065	Five
6	36	54	066	Six
7	37	55	067	Seven
8	38	56	070	Eight
9	39	57	071	Nine
:	3A	58	072	Colon
;	3B	59	073	Semicolon
<	3C	60	074	Less than sign
=	3D	61	075	Equals sign
>	3E	62	076	Greater than sign
?	3F	63	077	Question mark
@	40	64	100	Commercial At
A	41	65	101	Uppercase A
B	42	66	102	Uppercase B
C	43	67	103	Uppercase C
D	44	68	104	Uppercase D
E	45	69	105	Uppercase E
F	46	70	106	Uppercase F
G	47	71	107	Uppercase G
H	48	72	110	Uppercase H
I	49	73	111	Uppercase I
J	4A	74	112	Uppercase J
K	4B	75	113	Uppercase K
L	4C	76	114	Uppercase L
M	4D	77	115	Uppercase M
N	4E	78	116	Uppercase N
O	4F	79	117	Uppercase O

Table B-3. Roman-8 Character Conversion Table (continued)

Graphic	Hex	Dec	Oct	Description
P	50	80	120	Uppercase P
Q	51	81	121	Uppercase Q
R	52	82	122	Uppercase R
S	53	83	123	Uppercase S
T	54	84	124	Uppercase T
U	55	85	125	Uppercase U
V	56	86	126	Uppercase V
W	57	87	127	Uppercase W
X	58	88	130	Uppercase X
Y	59	89	131	Uppercase Y
Z	5A	90	132	Uppercase Z
[	5B	91	133	Opening square bracket
\	5C	92	134	Reverse slant
]	5D	93	135	Closing bracket
^	5E	94	136	Caret (circumflex)
_	5F	95	137	Underscore (low line)
‘	60	96	140	Opening Single Quote
a	61	97	141	Lowercase a
b	62	98	142	Lowercase b
c	63	99	143	Lowercase c
d	64	100	144	Lowercase d
e	65	101	145	Lowercase e
f	66	102	146	Lowercase f
g	67	103	147	Lowercase g
h	68	104	150	Lowercase h
i	69	105	151	Lowercase i
j	6A	106	152	Lowercase j
k	6B	107	153	Lowercase k
l	6C	108	154	Lowercase l
m	6D	109	155	Lowercase m
n	6E	110	156	Lowercase n
o	6F	111	157	Lowercase o
p	70	112	160	Lowercase p
q	71	113	161	Lowercase q
r	72	114	162	Lowercase r
s	73	115	163	Lowercase s
t	74	116	164	Lowercase t
u	75	117	165	Lowercase u
v	76	118	166	Lowercase v
w	77	119	167	Lowercase w

Table B-3. Roman-8 Character Conversion Table (continued)

Graphic	Hex	Dec	Oct	Description
x	78	120	170	Lowercase x
y	79	121	171	Lowercase y
z	7A	122	172	Lowercase z
{	7B	123	173	Opening brace (curly bracket)
|	7C	124	174	Vertical line
}	7D	125	175	Closing brace (curly bracket)
~	7E	126	176	Approximate (tilde)
▒	7F	127	177	DEL (delete, rubout)
	80	128	200	--undefined control code--
	81	129	201	--undefined control code--
	82	130	202	--undefined control code--
	83	131	203	--undefined control code--
	84	132	204	--undefined control code--
	85	133	205	--undefined control code--
	86	134	206	--undefined control code--
	87	135	207	--undefined control code--
	88	136	210	--undefined control code--
	89	137	211	--undefined control code--
	8A	138	212	--undefined control code--
	8B	139	213	--undefined control code--
	8C	140	214	--undefined control code--
	8D	141	215	--undefined control code--
	8E	142	216	--undefined control code--
	8F	143	217	--undefined control code--
	90	144	220	--undefined control code--
	91	145	221	--undefined control code--
	92	146	222	--undefined control code--
	93	147	223	--undefined control code--
	94	148	224	--undefined control code--
	95	149	225	--undefined control code--
	96	150	226	--undefined control code--
	97	151	227	--undefined control code--
	98	152	230	--undefined control code--
	99	153	231	--undefined control code--
	9A	154	232	--undefined control code--
	9B	155	233	--undefined control code--
	9C	156	234	--undefined control code--
	9D	157	235	--undefined control code--
	9E	158	236	--undefined control code--
	9F	159	237	--undefined control code--

Table B-3. Roman-8 Character Conversion Table (continued)

Graphic	Hex	Dec	Oct	Description
	A0	160	240	--undefined--
À	A1	161	241	Uppercase A grave
Â	A2	162	242	Uppercase A circumflex
È	A3	163	243	Uppercase E grave
Ê	A4	164	244	Uppercase E circumflex
Ë	A5	165	245	Uppercase E dieresis
Î	A6	166	246	Uppercase I circumflex
Ï	A7	167	247	Uppercase I dieresis
´	A8	168	250	Lowercase acute accent
`	A9	169	251	Lowercase grave accent
ˆ	AA	170	252	Lowercase circumflex accent
¨	AB	171	253	Lowercase dieresis accent
˜	AC	172	254	Lowercase tilde accent
Ù	AD	173	255	Uppercase U grave
Û	AE	174	256	Uppercase U circumflex
£	AF	175	257	Italian lira (pound sterling)
‾	B0	176	260	Overscore (high line)
Ý	B1	177	261	Uppercase Y acute
ý	B2	178	262	Lowercase y acute
°	B3	179	263	Degree
Ç	B4	180	264	Uppercase C cedilla
ç	B5	181	265	Lowercase c cedilla
Ñ	B6	182	266	Uppercase N tilde
ñ	B7	183	267	Lowercase n tilde
¡	B8	184	270	Inverted exlamation mark
¿	B9	185	271	Inverted question mark
¤	BA	186	272	General currency symbol
£	BB	187	273	Pound sterling sign
¥	BC	188	274	Yen sign
§	BD	189	275	Section mark
ƒ	BE	190	276	Dutch guilder symbol
¢	BF	191	277	Cent sign
â	C0	192	300	Lowercase a circumflex
ê	C1	193	301	Lowercase e circumflex
ô	C2	194	302	Lowercase o circumflex
û	C3	195	303	Lowercase u circumflex
á	C4	196	304	Lowercase a acute
é	C5	197	305	Lowercase e acute
ó	C6	198	306	Lowercase o acute
ú	C7	199	307	Lowercase u acute

Table B-3. Roman-8 Character Conversion Table (continued)

Graphic	Hex	Dec	Oct	Description
à	C8	200	310	Lowercase a grave
è	C9	201	311	Lowercase e grave
ò	CA	202	312	Lowercase o grave
ù	CB	203	313	Lowercase u grave
ä	CC	204	314	Lowercase a dieresis
ë	CD	205	315	Lowercase e dieresis
ö	CE	206	316	Lowercase o dieresis
ü	CF	207	317	Lowercase u dieresis
Å	D0	208	320	Uppercase A bolle
î	D1	209	321	Lowercase i circumflex
Ø	D2	210	322	Uppercase O oblique
Æ	D3	211	323	Uppercase AE diphthong
å	D4	212	324	Lowercase a bolle
í	D5	213	325	Lowercase i acute
ø	D6	214	326	Lowercase o oblique
æ	D7	215	327	Lowercase ae diphthong
Ä	D8	216	330	Uppercase A dieresis
ì	D9	217	331	Lowercase i grave
Ö	DA	218	332	Uppercase O dieresis
Ü	DB	219	333	Uppercase U dieresis
É	DC	220	334	Uppercase E acute
ï	DD	221	335	Lowercase i dieresis
ß	DE	222	336	Lowercase es-zet ligature
Ô	DF	223	337	Uppercase O circumflex
Á	E0	224	340	Uppercase A acute
Ã	E1	225	341	Uppercase A tilde
ã	E2	226	342	Lowercase a tilde
Đ	E3	227	343	Uppercase Eth
ð	E4	228	344	Lowercase eth Icelandic
Í	E5	229	345	Uppercase I acute
Ì	E6	230	346	Uppercase I grave
Ó	E7	231	347	Uppercase O acute
Ò	E8	232	350	Uppercase O grave
Õ	E9	233	351	Uppercase O tilde
õ	EA	234	352	Lowercase o tilde
Š	EB	235	353	Uppercase S hacek
š	EC	236	354	Lowercase s hacek
Ú	ED	237	355	Uppercase U acute
Ÿ	EE	238	356	Uppercase Y dieresis
ÿ	EF	239	357	Lowercase y dieresis

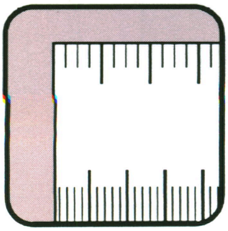
Table B-3. Roman-8 Character Conversion Table (continued)

Graphic	Hex	Dec	Oct	Description
Þ	F0	240	360	Uppercase Thorn
þ	F1	241	361	Lowercase thorn
·	F2	242	362	Lowercase Catalan middle dot
µ	F3	243	363	Lowercase mu (micro)
¶	F4	244	364	Pilcrow (paragraph sign)
¾	F5	245	365	Vulgar fraction: three fourths
−	F6	246	366	Minus sign
¼	F7	247	367	Vulgar fraction: one fourth
½	F8	248	370	Vulgar fraction: one half
ª	F9	249	371	Female ordinal
º	FA	250	372	Male ordinal
«	FB	251	373	Left pointing guillemets (quotes)
■	FC	252	374	Medium solid box
»	FD	253	375	Right pointing guillemets (quotes)
±	FE	254	376	Plus over minus
	FF	255	377	--undefined--

C

Printer Specifications

Location Guidelines



This appendix provides physical and environmental specifications for the HP LaserJet IIIP printer. Observe the following guidelines when you install your printer:

- Install the printer in a well-ventilated area.
- Install the printer on a sturdy and level surface.
- Install your printer where the temperature or humidity does not change abruptly. Do not position the printer near water sources, humidifiers, air conditioners, refrigerators, or other major appliances.
- Do not expose the printer to direct sunlight, dust, open flames, or ammonia fumes. If you install the printer near a window, make sure the window has a curtain or blind on it to block any direct sunlight.
- Install your printer with sufficient clearance from walls or other objects. There must be enough space around the printer for proper access and operation of the printer (see figure C-1).

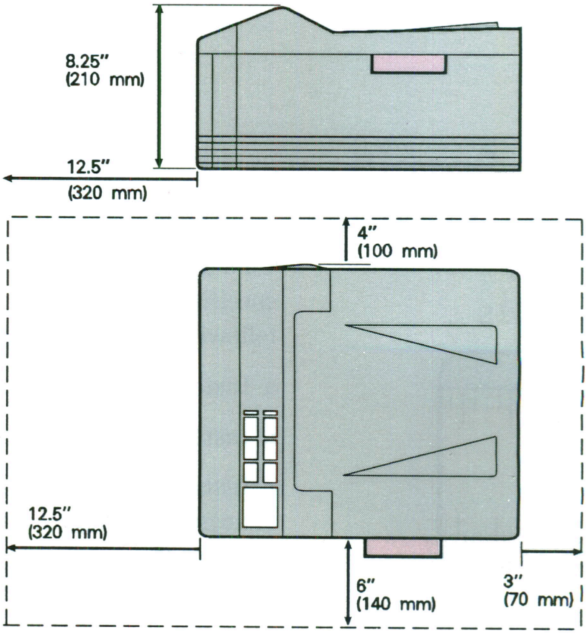

8.25"
(210 mm)
12.5"
(320 mm)
4"
(100 mm)
12.5"
(320 mm)
6"
(140 mm)
3"
(70 mm)

Figure C-1. HP LaserJet IIIP Printer Space Requirements

Physical dimensions

Printer Dimensions

Width:	14 inches (35.0 cm)
Depth:	16 inches (40.5 cm)
Height: standard	$8\frac{1}{4}$ inches (20.8 cm)
Height: with optional cassette base	$10\frac{1}{4}$ inches (26.1 cm)
Weight: standard	22 pounds (10.0 kg)
Weight: with optional cassette base	25 pounds (11.3 kg)

Electrical Requirements

Line Voltages and Frequencies

	MODEL A	MODEL AB
Source	100 to 115 volts (±10%)	220to 240 volts (±10%)
Frequency	50 - 60 Hz (±2Hz)	50 Hz (±2Hz)
Power Consumption		
Printing	574 watts (typical)	507 watts (typical)
Standby	44 watts (typical)	44 watts (typical)
Amperage		
Printing	5.0 amperes	2.3 amperes
Standby	.36 amperes	0.2 amperes

Environmental Specifications

Operating (Printer & EP-L Cartridge)

TEMPERATURE	HUMIDITY	ALTITUDE
50 to 91°F (10 to 32.5°C)	20 to 80% RH	0 to 10,000 feet (0 to 3100 meters)

In Storage (Printer & EP-L Cartridge)

TEMPERATURE	HUMIDITY	ALTITUDE
32 to 95°F (0 to 35°C)	10 to 80% RH	0 to 15,000 feet (0 to 4,600 meters)

FCC Regulations

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate this equipment.

Note

Use of a shielded cable is required to comply within the Class B limits of Part 15 of FCC rules.

The Federal Communications Commission has prepared a booklet entitled *Interference Handbook* (1986), which may be helpful to you. This booklet (stock number 004-000-004505-7) may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Safety Information

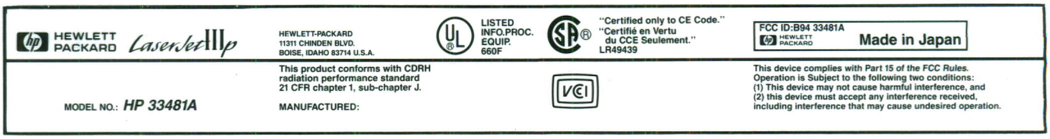
The HP 33481 printer is UL 478 listed, CSA 22.2 No. 220 certified, and GS licensed to EN 60950 9.87 (IEC 950).

Laser Safety

This printer is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the *Radiation Control for Health and Safety Act* of 1968. This means that the printer does not produce hazardous laser radiation. Since radiation emitted inside the printer is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

CDRH Regulations

The Center of Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States. The label shown in the following figure indicates compliance with the CDRH regulations and must be attached to laser products marketed in the United States.



HEWLETT PACKARD LaserJet IIIp

HEWLETT-PACKARD
11311 CHINDEN BLVD.
BOISE, IDAHO 83714 U.S.A.

LISTED
INFO.PROC.
EQUIP.
660F

"Certified only to CE Code."
"Certifié en Vertu
du CCE Seulement."
LR49439

FCC ID:B94 33481A
HEWLETT PACKARD
Made in Japan

MODEL NO.: HP 33481A

This product conforms with CDRH
radiation performance standard
21 CFR chapter 1, sub-chapter J.

MANUFACTURED:

VCI

This device complies with Part 15 of the FCC Rules.
Operation is Subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received,
including interference that may cause undesired operation.

Warning

Use of controls and adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

Finnish Laser Statement

The following notice applies to printer operation and servicing in Finland.

LASERTURVALLISUUS

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

HP 33481AB laserkirjoitin on käyttäjän kannalta turvallinen luokan 1 laserlaite. Normaalissa käytössä kirjoittimen suojakotelointi estää lasersäteen pääsyn laitteen ulkopuolelle.

Kirjoittimen on tarkastanut Suomessa laserturvallisuuden osalta Työterveyslaitos. Tarkastuksessa laitteen turvallisuusluokka on määritetty valtioneuvoston päätöksen N:o 472/1985 ja standardin SFS-IEC 825 mukaisesti.

VAROITUS! Laitteen käyttäminen muulla kuin käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

VARNING! Om apparaten används på annat sätt än i bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

HUOLTO

HP 33481AB kirjoittimen sisällä ei ole käyttäjän huollettavissa olevia kohteita. Laitteen saa avata ja huoltaa ainoastaan sen huoltamiseen koulutet henkilö. Tällaiseksi huoltotoimenpiteeksi ei katsota väriainekasetin vaihtamista, paperiradan puhdistusta tai muita käyttäjän käsikirjassa lueteltuja, käyttäjän tehtäväksi tarkoitettuja ylläpitotoimia, jotka voidaan suorittaa ilman erikoistyökaluja.

VARO!	Mikäi kirjoittimen suojakotelo avataan, olet alttiina näkymättömälle lasersäteilylle laitteen ollessa toiminnassa. Älä katso säteeseen.
VARNING!	Om laserprinterns skyddshölje öppnas då apparaten är i funktion, utsättas användaren för osynlig laserstrålning. Betrakta ej strålen.

Tiedot laitteessa käytettävän laserdiodin säteilyominaisuuksista:

Aallonpituus 770-795 nm
Teho 5 mW
Luokan 3B laser

German Regulations

ZZF Declaration Statement

The following notice is required to be printed in German and applies to printer operation and servicing in Germany.

According to West German Standard VDE 0836, printer servicing requires at least two servicemen. The following notice is required to be printed in German and applies to printer operations and servicing in Germany.

Funkenstörung Deutschland

Herstellerbescheinigung

Hiermit wird bescheinigt, daß das Gerät HP 33481AB in Übereinstimmung mit den Bestimmungen von *Postverfügung 1046/84* funkenstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Wird des Gerät innerhalb einer Anlage betrieben,

- **so muß bei Inanspruchnahme der *Allgemeinen Genehmigung FTZ 1046/84* die gesamte Anlage der oben genannten Genehmigung entsprechen.**
- **die mit einer *FTZ-Serienprüfnummer* gekennzeichnet ist, und für die eine Betriebsgenehmigung vorliegt oder beantragt wird, so sind in der Regel keine weiteren Schritte notwendig.**

Ozone Emission

The high voltage supplies found in laser printers and photocopiers generate ozone gas (O_3) as a by-product of the electrophotographic process. Ozone is only generated while the printer is printing.

UL Standards for Ozone

The only existing standard for ozone emissions has been established by Underwriters Laboratory (UL). All HP LaserJet family printers meet this standard when shipped from the factory to our customers.

Employer Responsibilities

Because ozone can be an irritant, various regulatory agencies have established limits to the amount of ozone to which employees may be exposed. The work place specifications are:

- A person may not be exposed to an average concentration of greater than 0.1 part per million (PPM) of ozone for a period of eight hours.
- At this time, the ACGIH has proposed a ceiling limit of 0.1 PPM for ozone.

The employer is responsible for providing a work environment that meets these standards.

The HP LaserJet IIIP printer produces unmeasurable quantities of ozone, far below the 0.1 PPM figure proposed by the UL/ACGIH.

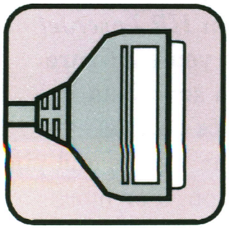
Toner Safety and Care

Toner is a nontoxic substance composed of plastic, iron, and a small amount of pigment. If toner comes in contact with skin or clothing, remove as much toner as possible with a vacuum or dry tissue wipes, and then wash with **cold** water. Hot water causes toner to be more difficult to remove. Because toner tends to be degraded by vinyl materials, contact with vinyl should be avoided.

D

Configuration

Introduction



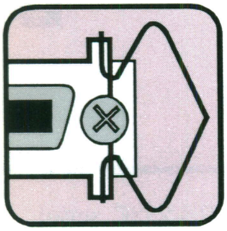
The HP LaserJet IIIP printer supports an RS-232C serial interface and a Centronics parallel interface. An accessory RS-422A differential serial interface adapter is available. The back of the printer has two connectors, parallel and serial, allowing you to connect one of the interfaces.

Use the control panel Configuration Menu to configure the interface. The printer stores configuration information in permanent memory, which means the printer saves the configuration even when you turn off the printer. For more detailed information, see the *PCL 5 Printer Technical Reference Manual*.

Caution

Hewlett-Packard assumes no liability for any damage resulting from the use of a non-HP interface. Before replacing the standard interface with a non-HP interface, you may want to ensure that the interface manufacturer or supplier will assume the potential risks involved.

Parallel Interface



A parallel interface sends data to the printer faster than does a serial interface. The parallel interface is generally best if you use many soft fonts in your documents or if you want to print complex graphics. However, the parallel printer cable cannot be more than 10 feet long.

Your printer's control panel is configured with the parallel interface as the factory default.

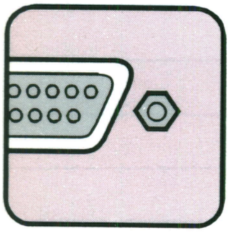
To configure your printer for parallel I/O operation, use the Configuration Menu and the instructions in *HP LaserJet IIIP Printer Getting Started Guide*. When you configure your printer for parallel operation, you can send data to the printer using the standard Centronics parallel communication protocol. Table D-1 lists the signals and pin designations used for parallel communication. For more detailed information, see the *PCL 5 Printer Technical Reference Manual*.

Table D-1. Parallel Pin Assignments

Signal	Pin #	Pin#	Signal
STROBE (Input)	1	19	GND
DATA 1 (Input)	2	20	GND
DATA 2 (Input)	3	21	GND
DATA 3 (Input)	4	22	GND
DATA 4 (Input)	5	23	GND
DATA 5 (Input)	6	24	GND
DATA 6 (Input)	7	25	GND
DATA 7 (Input)	8	26	GND
DATA 8 (Input)	9	27	GND
$\overline{\text{ACK}}$ (Output)	10	28	GND
BUSY (Output)	11	29	GND
Paper error (Output)	12	30	GND
Select	13	31	NC
NC	14	32	$\overline{\text{fault}}$ (Output)
NC	15	33	Auxout1 (Output)
O VDC	16	34	NC
Chassis GND	17	35	Auxout2 (Output)
+5 VDC (Output)	18	36	NC

The bar above (—) before some signals indicates that the signal is negative true (active LOW). GND means the connection is grounded. NC indicates that the pin has no connection.

Serial Interface



Use a serial interface when you need to locate the printer far away from your computer (up to 50 feet). Serial interfaces are not as fast as parallel.

Use the Configuration Menu and the instructions in *HP LaserJet IIIP Printer Getting Started Guide* to configure your printer for serial I/O operation. When you configure your printer for serial operation, you transfer data to the printer using serial communication protocol. You can use either an RS-232C or an RS-422A cable. (If you plan to use RS-422A, you must order an RS-422A adapter for the HP LaserJet IIIP printer's RS-232C port. HP part number 92270N.)

Table D-2 lists RS-232C and RS-422A pin assignments and signal descriptions. Those pins not appearing in the table are not used.

Table D-2. Pin Assignments for a Serial Cable

Pin Number	Description	RS-232	RS-422	I/O
1	Protective ground.	*	*	-
2	Transmitted data (data from printer).	*		Output
3	Received data (received by printer).	*		Input
3 (RS-422)	Received data inverted (RDA) (received by printer).		*	Input
4	Request to send. This signal is HIGH when unit is powered on.	*		Output
7	Signal ground.	*	*	
9 (RS-422)	Send data inverted (SDA).		*	Output
10 (RS-422)	Send data noninverted (SDB).		*	Output
14	Must be connected to ground (7) to select RS-422 mode. (SDB)		*	Input
18 (RS-422)	Receive data noninverted (RDB)		*	Input
20	Data terminal ready	*		Output

The asterisks (*) identify signals used.

The following serial cabling schematics are typical of IBM (AT/XT) and compatible personal computers using the standard (9/25) pin serial RS-232C interface.

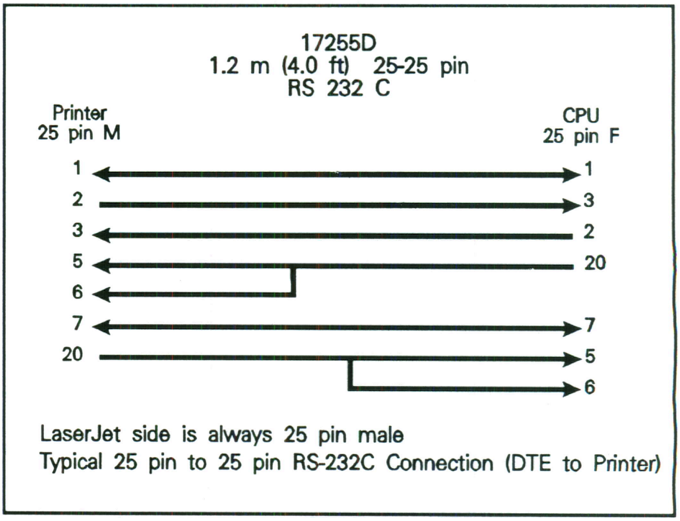

17255D
1.2 m (4.0 ft) 25-25 pin
RS 232 C
Printer
25 pin M
CPU
25 pin F
1
2
3
5
6
7
20
1
3
2
20
7
5
6
LaserJet side is always 25 pin male
Typical 25 pin to 25 pin RS-232C Connection (DTE to Printer)

Figure D-1. Typical PC/XT and PS/2 Pin Assignments

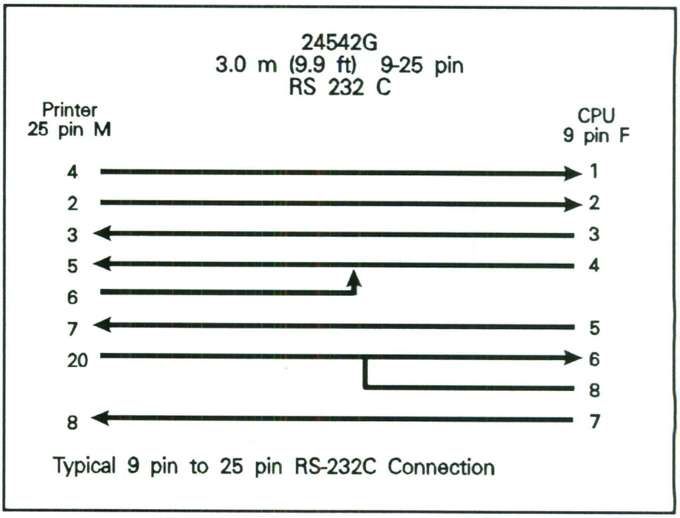

24542G
3.0 m (9.9 ft) 9-25 pin
RS 232 C
Printer
25 pin M
CPU
9 pin F
4
2
3
5
6
7
20
8
1
2
3
4
5
6
8
7
Typical 9 pin to 25 pin RS-232C Connection

Figure D-2. Typical AT Pin Assignments

The following cabling schematic is based on an HP Vectra PC with an HP24541B RS-422A interface card installed. Your configuration may vary.

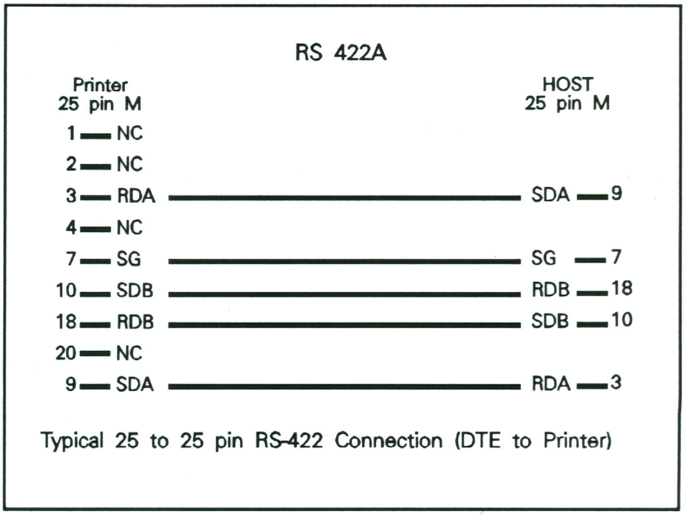

RS 422A
Printer
25 pin M
HOST
25 pin M
1 NC
2 NC
3 RDA
4 NC
7 SG
10 SDB
18 RDB
20 NC
9 SDA
SDA 9
SG 7
RDB 18
SDB 10
RDA 3
Typical 25 to 25 pin RS-422 Connection (DTE to Printer)

Figure D-3. Typical RS-422A 25-25 Pin Assignments

Setting Up Printer for Serial RS-422

Use an RS-422A interface for extremely long-distance communications (from 50 to 4000 feet). If your computer uses an RS-422A interface, you will need to purchase the accessory RS-422A adapter (HP part number 92270N) and attach it to your printer's serial port. Set your printer's I/O option to `SERIAL`.

Note

Although there is limited application support for RS-422 serial port, MS-DOS and PC-DOS (as of this writing) do not support the RS-422 interface protocol. Therefore, RS-422 is not a recommended configuration for an MS-DOS or PC-DOS system.

If your computer includes an RS-422A interface, and you need to use an RS-422A cable, you must:

- Configure your control panel (see the *HP LaserJet IIIP Printer Getting Started Guide*).
- Perform the appropriate computer setup procedures (see the *HP LaserJet IIIP Printer Getting Started Guide* or your computer system documentation).

Next, you need to make a physical change to the printer. You must install an RS-422A adapter (HP part number 92270N) to the serial port on the back of the printer, as follows.

1. Switch the printer off and unplug the power cord. Disconnect the serial or parallel printer interface cable from the rear of the printer. (You will need to use a screwdriver to remove serial printer interface cables.)

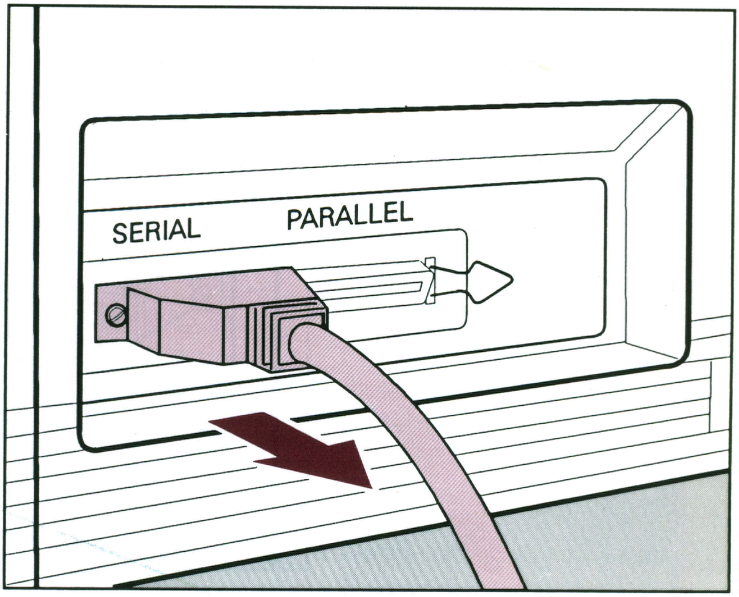


Figure D-4. Disconnecting Cord and Cable

2. Push the RS-422 adaptor into the serial port.
3. Use a screwdriver to secure the RS-422 adaptor to the serial port.

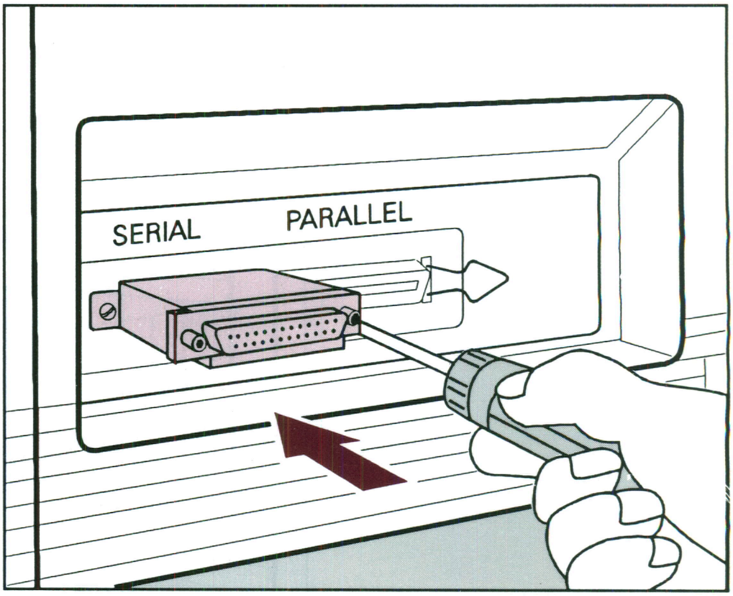


Figure D-5.
Connect the RS-422 Adaptor to the Serial Port

4. Connect the RS-422 serial cable to the RS-422 adaptor, making sure to secure the screws on the cable.

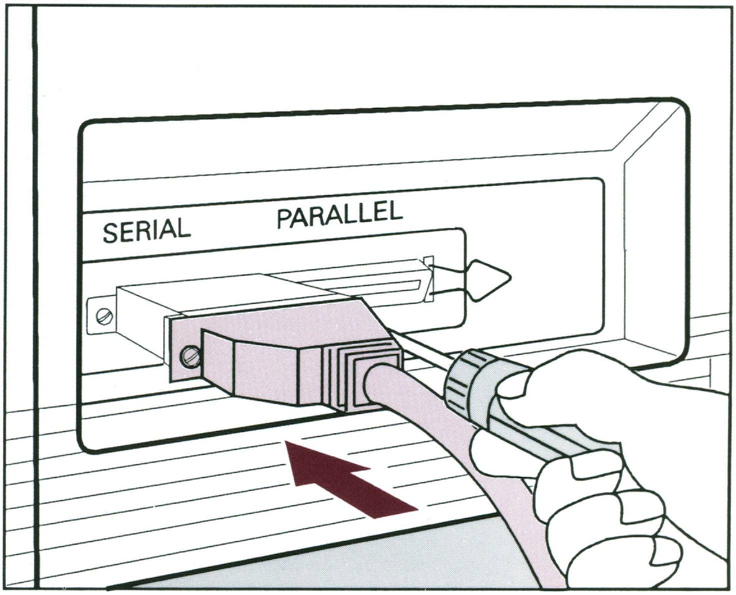


Figure D-6. Secure the Serial Cable to the Adaptor

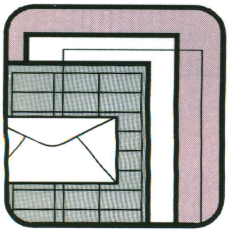
5. With the power switch off, plug in the power cord.
6. Turn the printer on.

The printer is now ready to communicate through its serial interface according to the RS-422 interface specifications.

E

Selecting Paper and Other Print Media

Introduction



Several types of paper and other print media can be used with the HP LaserJet IIIP printer, provided certain guidelines are met. Using paper that does not meet the guidelines outlined in this chapter may increase the incidence of paper jams, cause premature wear to the printer, and contribute to repair costs.

Before purchasing any quantity of media or specialized forms, make sure your paper supplier obtains and understands the paper and print media requirements specified in *HP LaserJet Printer Family Paper Specification Guide* (HP part number 5002-1801).

Note

It is possible that paper could meet all of the guidelines in this appendix and still not print satisfactorily because of abnormal characteristics of the printing environment or other variables over which Hewlett-Packard has no control.

For this reason we recommend testing any paper before buying large quantities.

Caution

Use of media outside these specifications may cause problems with your printer, requiring service. Such service will not be covered by Hewlett-Packard warranty or service agreements.

Paper and Pre-printed Forms

For best results, use conventional white photocopy paper for most of your print jobs (such as Xerox 4024 or Canon NP paper). The paper should be of good quality. It should be free of cuts, nicks, tears, spots, loose particles, dust, wrinkles, voids, and curled or bent edges.

High-Quality Papers

High-quality papers tend to have a rougher surface that does not always accept the toner as well as does copier paper. However, your HP LaserJet IIIP printer will print on many of these high-quality grades satisfactorily. Some manufacturers are now producing high-quality papers designed especially for laser printing.

Colored Paper with Heat Resistant Pigments

Colored paper should be of the same high quality as white photocopy paper. Pigments used must be able to withstand the printer's fusing temperatures of 392° F (200° C) for 0.1 second without deterioration. Do not use paper with a colored coating that has been added after the paper is produced.

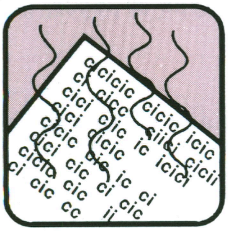
Heavy Paper Stock

Use paper that falls within the 16 to 28 pound (60 to 105 g/m^2) ranqge. DO NOT use extremely heavy paper stock; misfeeds, mis-stacking problems, paper jams, poor toner fusing, poor print quality and excessive mechanical wear can result. DO NOT attempt to print on paper that has a weight greater than 28 pound.

Note

The HP LaserJet IIIP printer was not designed to print on both sides of the page. Attempting to do so may yield unsatisfactory results.

Forms Pre-printed with Heat-Resistant Ink



To avoid problems with pre-printed forms, observe the following guidelines:

- Forms must be printed with heat-resistant inks that will not melt, vaporize, or release hazardous emissions when subject to the printer's approximately 200° C (392° F) fusing temperature for 0.1 second.

  Before using pre-printed forms, make sure the ink is completely dry to prevent it from transferring to the printer rollers and contaminating the internal printer mechanisms. (This kind of ink transfer is called "offset" because it is similar to the printing process used in an offset printing press.)

- The inks used must be non-flammable and should not have adverse effects on any printer rollers.
- Forms should be sealed in a moisture-proof wrapping to prevent moisture changes during storage.

Papers to Avoid

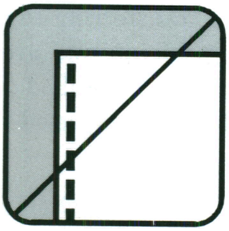
Follow these guidelines to avoid poor print quality or damage to your printer:

Too Rough or Too Smooth, or with Embossed Letterheads

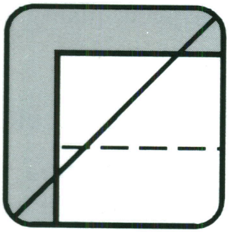
Paper surface should have neither a heavy texture nor a glossy smoothness. Smoother paper should be used if sharper resolution or detail is desired. Paper with embossed or heavily textured surfaces is NOT recommended for use in the HP LaserJet IIIP printer because of the potential for misfeeding or paper jams and decreased print quality.

Paper with Cutouts or Perforations

Hewlett-Packard recommends that you not use paper with cutouts or perforations in the HP LaserJet IIIP printer. However, if you choose to use this type of paper, here are some guidelines to follow:



- **Cutouts:** A cutout is defined as any portion of the paper which has been removed, including binder holes, notches, square cuts, etc. Do not print at a cutout location or closer than 4 mm (0.10 in) to the edge of a cutout, because toner may pass through and cause excessive build-up inside the printer and on the back side of the paper. Holes should be cut cleanly, without burrs, to avoid multiple feed, contamination problems or paper jams. Cutout paper must conform to the general specifications for plain white photocopy paper.



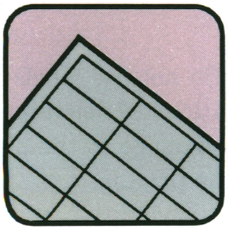
- **Perforations:** Paper with internal perforations such as multi-part forms may cause misfeeds and paper jams. Avoid perforations which run across the page perpendicular to the paper path. The perforations should be cleanly cut. Perforations should be made from the direction of the image side so that edge trimmings are away from and will not scratch the surface of the EP-L cartridge's photo-sensitive drum. DO NOT print closer than 4mm (0.10 in) to a perforation.

Adhesive Labels

Use only labels recommended for use in laser printers.

When printing on labels, *always use the detachable front output tray* to avoid excessive curling of the sheets, severe paper jams, and to avoid potential damage to the printer.

Label Construction



When you select your labels, you must consider the quality of each of the components:

- **Top or face sheets:** The top sheet, which is the printed surface, is usually composed of photocopy paper.
- **Carrier sheets:** The carrier sheet should be bleached sulfate stock and silicone-coated for easy release of the face sheet.
- **Adhesives:** The adhesive should be stable at the 200° C (392° F) temperatures encountered in the printer's fusing process and must not give off any emissions that exceed exposure levels or threshold limits established by OSHA and other safety agencies.

  No adhesive should be exposed between the labels. To test label stock for adhesive exposure, press a sheet of plain paper against a sheet of label stock. The plain paper should not adhere to the label stock at all.
- **Label arrangement:** Labels should be arranged on the carrier sheet so that they cover the entire page, *with the only exposed spaces being lengthwise down the sheet.* Using label stock with spaces between labels often results in labels peeling off during the printing cycle, causing serious jamming problems.

Labels can be specially manufactured to leave a margin around the outside edges corresponding to the outer margins of the printable area. If labels are manufactured this way, do not remove the excess top sheet material from the carrier sheet until after printing. These precautions will help prevent problems resulting from labels pulling loose from the carrier sheet.

- **Label curl:** Labels must lie flat with no more than $\frac{1}{2}$ inch of curl in any direction.
- **Poorly manufactured labels:** Do not use labels having wrinkles, bubbles or other indications of delamination. Use of such labels may result in damage to the printer due to labels peeling off inside the printer.

You should test any label stock you are considering to verify its performance is acceptable.

See the *HP LaserJet Accessory Catalog* for ordering information and label part numbers.

Overhead Transparencies

Use only overhead transparencies recommended for use in laser printers.

Use the Detachable Front Output Tray

When printing on overhead transparencies, *always use the detachable front output tray* to avoid excessive curling of the sheets, severe paper jams, and to avoid potential damage to the printer. Always remove each sheet from the output tray before the next sheet of film is printed.

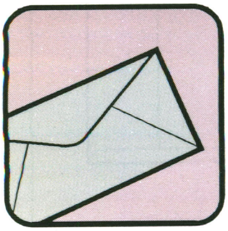
Getting a Sharp Image

Occasionally overhead transparencies show light character shadows at either the top or bottom of the sheets. This problem may be caused by a dirty paper path. Follow the directions on "Cleaning the Printer" in chapter 7. If using cleaning paper does not solve the problem, try using a different type of overhead transparency.

Ordering Transparency Film

Hewlett-Packard supplies overhead transparencies through its Direct Marketing Division. To order, call 800-538-8787 and ask for HP part number 92296T for letter size or 92296U for A4 size. (Call 800-387-3867 in Canada; call 0374-441212 in U.K.)

Envelopes



Hewlett-Packard has tested and found that many styles of envelopes can be printed using either the Multi-Purpose (MP) tray or the optional Lower Cassette Envelope (LE) tray. Some envelope styles perform better than others because their construction is better suited to feeding through a laser printer.

Note

Hewlett-Packard Company neither warrants nor recommends the use of a particular brand of envelope. Envelope properties are subject to change by envelope manufacturers and Hewlett-Packard Company has no control over such changes.

Envelope Construction

A well-constructed envelope has a leading edge that enters the printer straight; and it has sharp, well-creased folds, with no more than two thicknesses of paper at the edge. A manufacturer's folding accuracy may vary enough to cause some of their envelopes to feed well and others to jam. Select envelopes of the quality and consistency necessary.

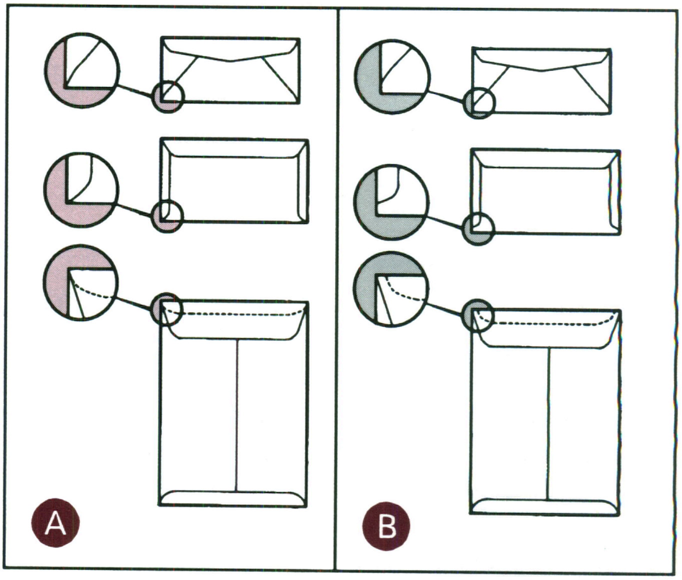
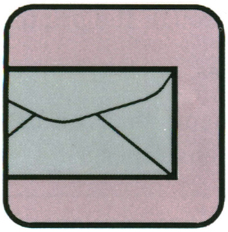


Figure E-1. Envelope Construction

A. Good Construction
B. Poor Construction

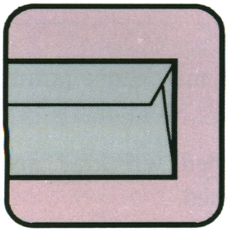
Note

The basis weight of the envelope paper should not exceed a 24 pound rating (90 grams/m^2) or jamming may result. Envelopes should lie flat with less than 0.25 inch of curl, and not be wrinkled, nicked, or otherwise damaged.



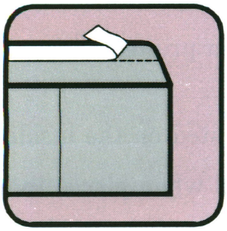
Business Envelopes

Commercial or *Office* envelopes (also called Business or Regular), with diagonal seams and standard gummed flaps, are the most widely used type of envelope. This style performed the most reliably in Hewlett-Packard testing.



Double Side Seam Envelopes

Double side seam construction has vertical seams at both ends of the envelope, rather than diagonal seams. A variety of double side seam envelopes were tested and most performed acceptably.



Envelopes with Adhesive Strips

Envelopes using a peel-off adhesive strip, or more than one flap that folds over to seal, must use adhesives compatible with the heat and pressure of the fusing rollers in the printer. The extra flaps and strips may result in wrinkling or creasing and may cause more frequent jamming.

Sizes

Use only envelopes within the following sizes:

- Minimum: $3\frac{1}{2}$ x 7 inches (86 x 178 mm)
- Maximum: $7\frac{2}{5}$ x $10\frac{1}{2}$ inches (188 x 267 mm)

Note

Always use the detachable front output tray when printing envelopes. This allows the envelopes to travel a shorter distance through the printer and avoids excessive curl.

Envelopes to Avoid

Remember that in laser printers, envelopes will have to:

- Bend and curve as they travel through the printer.
- Be subjected to high temperatures.
- Pass by sensitive printer components that can be damaged by hard objects on the envelopes.

Caution

Under no circumstances should you use envelopes having clasps, snaps, windows, or synthetic materials. These items can cause severe damage to the printer.

Other envelope characteristics that may cause jamming or damage to your printer include:

- Envelopes that are damaged, curled, wrinkled, poorly manufactured or irregularly shaped.
- Extremely shiny or highly textured envelopes.
- Envelopes that have raised lettering.
- Envelopes that have already been printed with a LaserJet printer.
- Some envelopes that are pre-printed on the inside.
- Envelopes that do not stack level when placed in a pile.

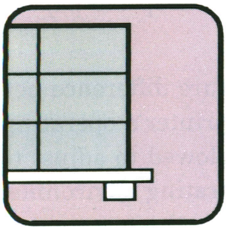
Storing Media

The performance of the HP LaserJet IIIP printer depends on the condition of the media you use. Proper media storage is important.

Store Paper in Its Ream Wrap Until Ready to Use

When shipping paper through a variety of environments, the entire stack of cartons on the shipping pallet should be wrapped in moisture-proof plastic. When shipped across a body of water, individual cartons should be wrapped as well. Paper should never be shipped in such a manner that it becomes folded or otherwise damaged.

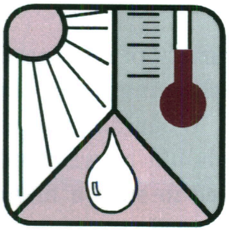
Stack Paper Properly



Observe the following guidelines when stacking paper:

- DO NOT store cartons directly on the floor; cartons should be placed on a pallet or on shelves.
- Stack no more than six cartons high.
- Stack cartons squarely on top of one another, and stack each carton upright.
- DO NOT store individual reams so that they will curl or warp along the edges.
- DO NOT place other objects on top of the paper, whether it is packaged or unpackaged.

Observe Important Environmental Considerations



Protect paper from temperature and humidity extremes. The HP LaserJet IIIP printer is designed to operate in a wide range of environmental conditions, but for best performance, store and use paper at 20° C ± 3° (68° F ± 5°), with a relative humidity of 45% ± 5%.

When paper is used in an environment that is outside the ranges of temperature and humidity shown above, and optimum print quality is desired, follow these guidelines:

- DO NOT expose the paper to humidity or temperature extremes. Any extreme changes in the environment, especially if the paper is left in the Multi-Purpose tray or stored unwrapped, can cause the paper to warp.
- In the case of humidity extremes, keep the paper tightly wrapped in plastic.
- If there is a significant temperature difference between the paper storage area and the printer's operating environment, paper should be allowed to adjust to the temperature in the printer's operating environment before you unwrap it. The greater the temperature difference, and the more paper you have to stabilize, the longer this adjustment period should be.

Loading Paper Into the Printer

- DO NOT use paper that is creased, folded or damaged.
- Always discard the top and bottom sheets of a new ream.
- Re-wrap partially used reams to help maintain original moisture content.
- DO NOT overfill the paper tray.
- DO NOT add small amounts of paper on top of paper already in the tray. This practice greatly increases the occurrence of two or more sheets feeding at once.
- DO NOT load mixed types of paper into the same paper tray.
- Correctly position pre-printed letterhead or punched paper:

  Multi-Purpose Tray
    letterhead - print side down
    punched - holes to right side
  Optional Lower Cassette Tray
    letterhead - print side up
    punched - holes to right side

- When using photocopy paper that comes with an arrow on the package label, with the arrow pointing up, remove the paper:

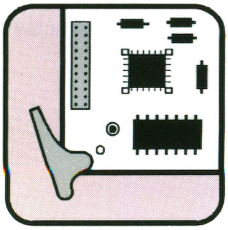
  Turn the stack over to load into the Multi-Purpose tray.
  Do not turn the stack over to load paper into the Optional Lower Cassette tray.

- When experiencing excessive paper curl, try turning the unused paper stack over in the tray, and printing on the opposite side of the paper. Excessive paper curl may also be caused by unusually moist paper.

F

Memory Board Installation

General



Installation of the HP 33474B one-megabyte or HP 33475B two-megabyte RAM memory board allows you to expand the HP LaserJet IIIP printer's standard memory by an additional four megabytes. There are two memory expansion slots. You can install any combination of one- or two-megabyte boards. Four megabytes is the maximum expanded memory the printer can use.

When you add printer memory, the printer can print full-page 300 dpi graphics, store more data in the page buffer, download more soft fonts, and run more macros. You can also use the Page protection feature of the HP LaserJet IIIP printer, therefore eliminating `ERROR 21` messages when pritning complex graphical images.

Protect Yourself and the Board

Since the memory board contains electrical components that are easily damaged by small amounts of static electricity, you should observe the following cautions:

Warning

Hazardous voltages are present in the printer. Never remove any access cover or work near exposed electrical parts when power is connected.

Caution

- If possible, use an anti-static wrist strap and a grounding mat, such as those included in the Electrically Conductive Field Service Grounding Kit (HP 9300-0933).

OR

- Before removing the board from its anti-static bag, touch the surface of the bag and touch any bare sheet metal surface on the rear of the printer.
- To prevent static electricity buildup, avoid activities such as moving about the work area, especially if it is carpeted.
- Handle the board carefully at all times. Never flex or put excessive pressure on it. Avoid touching board components.

Install The Board

First, read all instructions carefully. Make sure you understand all installation procedures before beginning installation. You will need a small Phillips screwdriver.

1. Identify the board (see figure F-1). In the table below, "xxxxx" indicates that the last five digits are manufacturer's part numbers that may change. Refer to the circle in figure F-1 for part number location.

Part Number	Size
33474-xxxxx	1 Megabyte
33475-xxxxx	2 Megabyte

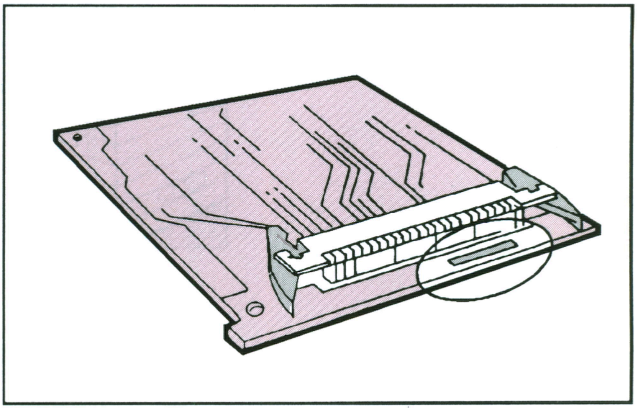


Figure F-1. Identifying the Memory Board

If you are not going to install the board immediately, place it in a cool, dry place in its original packaging. If you have not received the correct board, notify your local Hewlett-Packard Sales and Service Office or authorized dealer immediately.

2. Turn off your computer.
3. Turn off the printer and unplug the power cord (see figure F-2). Disconnect any serial or parallel printer interface cables from the rear of the printer either by using a screwdriver or by unclipping the cable, as appropriate.

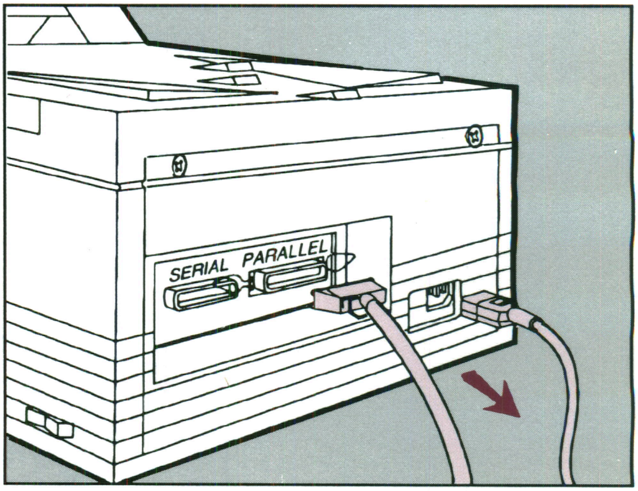


Figure F-2. Removing Cables

4. Open the hinged rear access panel by loosening the two captive screws. Be careful to loosen only these two screws (see the left half of figure F-3).
5. Discharge any built-up static electricity by touching any bare sheet metal surface on the rear of the printer.
6. Remove the interface plate by removing the three screws that are indicated on the plate by asterisks (see the right half of figure F-3).

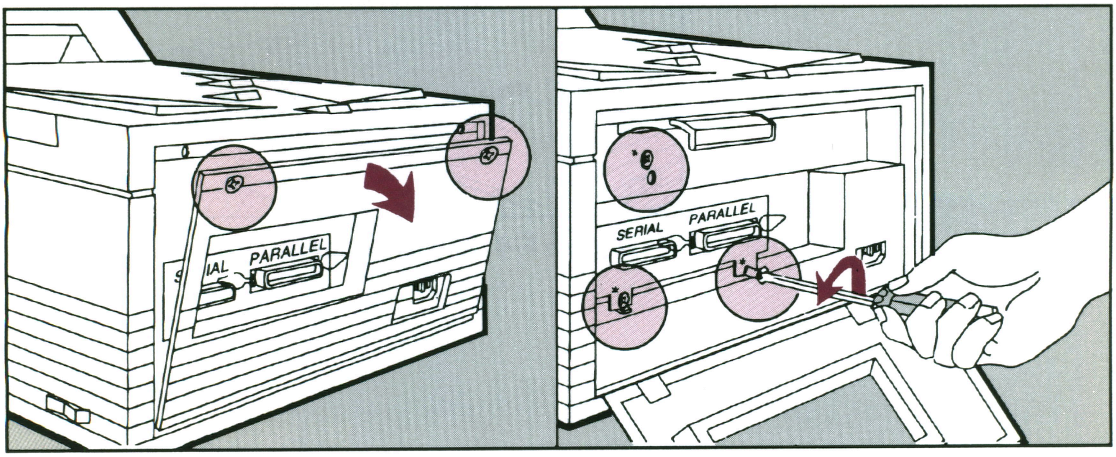


Figure F-3.
Opening the Rear Access Panel and Removing the Interface Plate

7. Pull the interface plate out toward you and downward (see figure F-4).

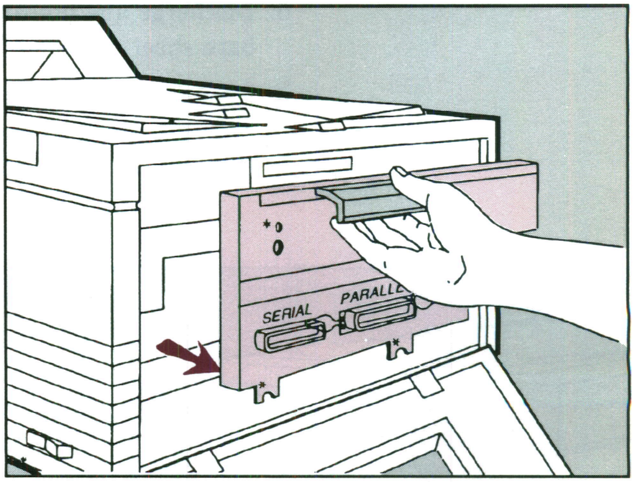

SERIAL
PARALLEL

Figure F-4. Removing the Interface Plate

8. To install the first board, remove the board from the anti-static packaging, holding it with green-tab-side up, and slide it into printer using the upper slot guide rails (see figure F-5).

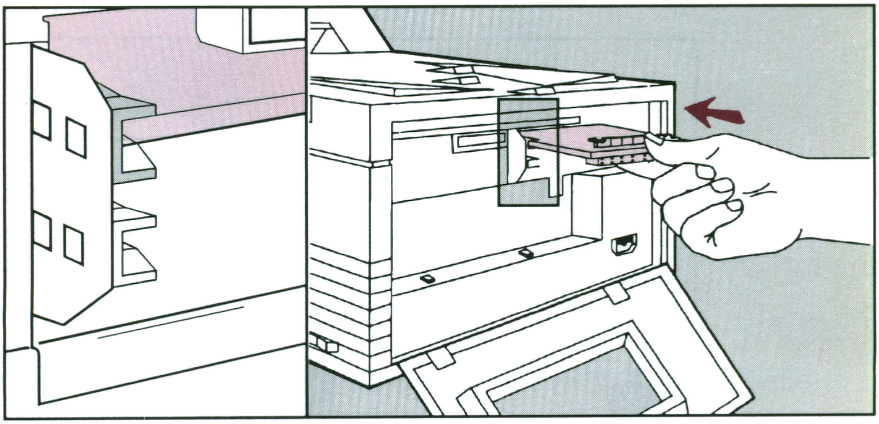


Figure F-5. Installing the First Board

9. Fully seat the board by holding the printer with your free hand and **firmly** pushing against the flat green plastic area (see figure F-6). When the board is fully seated, the green tabs on the memory board move from position Ⓐ to position Ⓑ and no longer move.

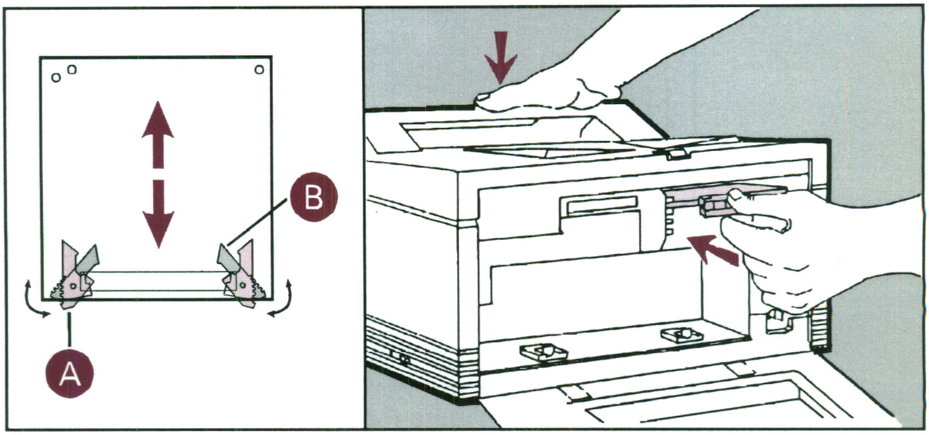


Figure F-6. Seating the First Board

10. If you are installing a second board, insert it below the first board in the same manner (see figure F-7). The second board connects to the previously installed board. Be sure to **firmly** push against the green plastic area to properly seat the board pin connector. When the board is fully seated, the green tabs on the memory board do not move.

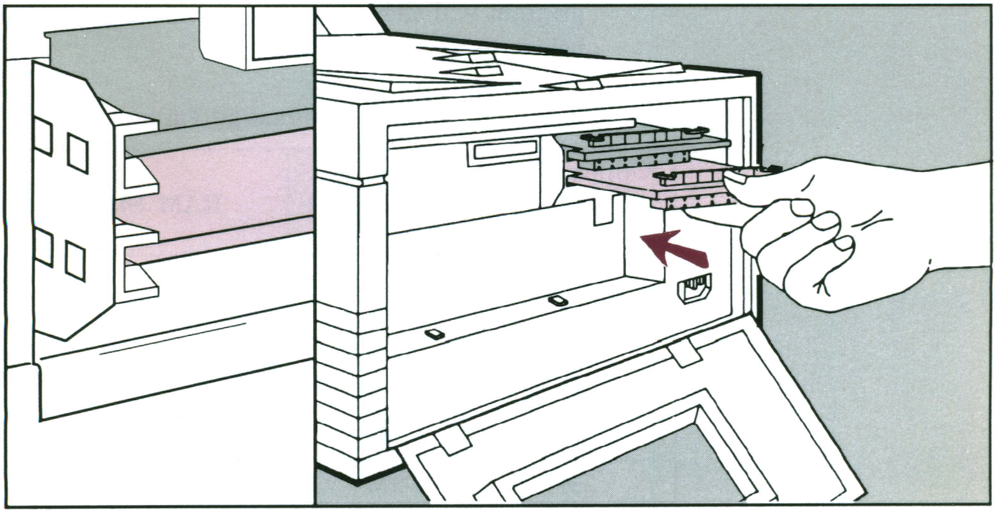


Figure F-7. Install the Second Board

11. Replace the interface plate by putting the tabs into the slots and rotating the plate into its upright position. Be sure the plate pin connector is **firmly** seated by pushing in on the green handle (see figure F-4).
12. Replace the three screws removed in step 6.
13. Close the rear access panel and secure it with the two captive screws.

14. Plug in the power cord and the printer interface cable, then switch the printer and computer on.

15. Click the ON LINE key to take the printer off-line. The green On-Line indicator should be off.

16. Hold down the Alt key and click the Test key to print a self test. Wait for printout to appear.

17. If the memory board is operating correctly, the self test printout will show one of the messages in the table below.

Self Test Message Table

Upper Slot (in Megabytes)	Lower Slot (in Megabytes)	RAM Size Message
1M	None	RAM size 2048K bytes
2M	None	RAM size 3072K bytes
1M	1M	RAM size 3072K bytes
1M	2M	RAM size 4096K bytes
2M	1M	RAM size 4096K bytes
2M	2M	RAM size 5120K bytes

In Case Of Difficulty

If you have problems while installing additional memory, check the following:

- If the RAM size is incorrectly reported, access the memory board by repeating steps 2 through 8 and make sure the board pin connector is **FIRMLY** seated. **The green tabs on the memory board do not move when the board is fully seated.**
- `53 ERROR` or `53 ERROR UNIT X`: Indicates an error on one or more RAM expansion boards. The X value (1 or 2), if available, indicates which expansion board failed (1 is the top board). To resume printing, hold down the Alt key and click the Continue key. If this error persists after reseating the memory board, contact you local Hewlett-Packard Sales and Service Office or authorized dealer for assistance.
- `57 ERROR UNIT X`: Indicates that more than four megabytes of expanded memory has been installed. The extra memory will be ignored. To resume printing, hold down the Alt key and click the Continue key.
- `63 SERVICE ERROR`: If this message appears, the board may be defective or incorrectly installed. Check to be sure the board is seated properly. Attempt to clear the error by switching the printer off and then on again. If you still see this error, contact your local Hewlett-Packard Sales and Service Office or authorized dealer for assistance.

Memory Board Removal

To remove a memory board, first repeat steps 2 through 7 in the section above. Then unseat the board by squeezing the green tabs together while pulling the board toward you (see figure F-8). Place the board in antistatic packaging, and close up the printer following steps 11 through 14.

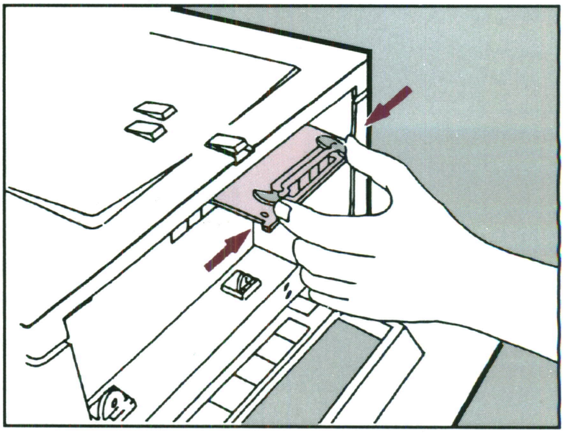


Figure F-8. Removing a Memory Board

Glossary

A4

The international standard paper size, (210 mm by 297 mm size paper).

Application

A software program or group of programs for solving common business tasks, for example, Lotus 1-2-3, Windows, or WordStar.

AutoFont Support

Hewlett-Packard's standard for supplying font width information (metrics) for both scalable typefaces and bitmapped fonts used by HP LaserJet printers.

Baud Rate

The data transfer rate between the computer and the printer. Baud rate applies only to serial interfaces.

Bitmapped Font

A particular collection of symbols with fixed character size and shape. Bitmapped fonts are made of dot-by-dot patterns in predefined point sizes.

C5

An international envelope size, also known as "ISO-C5" (162 mm by 229 mm).

Commercial #10 (COM-10)

A standard business envelope used primarily in the United States and Canada ($4\frac{1}{8}$ by $9\frac{1}{2}$ inches).

Configuration

The process of changing certain printer settings to allow your computer to communicate properly with the printer.

Configuration Menu

Allows selection of printer configuration choices for communication with the computer. Also allows selection of Resolution Enhancement and Page protection choices from the control panel.

DL

An international envelope size, also known as "ISO-DL" (110 mm by 220 mm).

Default

A printer setting used in the absence of a printer command selection by the user.

Downloading

Transferring data or soft fonts from your computer to the printer.

DPI

Dots per inch. A measure of the resolution of a printed image.

Drivers

Files used by some software applications to access printer characteristics. Printer drivers convert software commands into printer language.

Embedded Printer Commands

Printer commands written by the user directly into a software file.

Escape Sequences

PCL software commands sent to the printer. The printer distinguishes these commands from regular text by the presence of an **escape character** ($^{E}_{C}$), a special control code. Also known as PCL printer commands.

Executive (EXEC)

A smaller-sized paper, primarily used in the United States and Canada for corporate communications ($7\frac{1}{4}$ by $10\frac{1}{2}$ inch size paper.

Factory Default

The settings that are programmed into the printer at the factory. These settings are in use until you override them from the control panel or by sending printer commands.

Fixed Spacing

Refers to uniform spacing of all characters and symbols in a font. Measured in characters per inch (pitch). Typewriter-like. Also called **fixed pitch**.

Font

A collection of characters and symbols of the same typeface design. A font is described by symbol set, spacing, pitch, point size (bitmapped fonts only), style, stroke weight and typeface family. Fonts can refer to the printer's internal fonts, or fonts stored in optional font cartridges and soft font disks. Fonts can either be bitmapped or scalable.

Font Cartridge

A plug-in device containing additional fonts. Cartridges are installed in the printer so that a greater variety of fonts can be selected for printing.

Font Characteristics

The symbol set, spacing, pitch, point size, style, stroke weight, and typeface family selections that determine what a printed font looks like.

Font Width

The measurement of the horizontal spacing of each character in a font. Software applications use this information to determine how many characters can fit on a given line. Also known as *font metric*.

HP-GL/2

An industry standard language for pen plotters that is integrated into the PCL 5 printer language. Allows drawing of vector (line) drawings, such as circles and rectangles.

Internal Fonts

The fonts resident in the printer when shipped from the factory.

Job Size

The printer formats data into an image before it physically picks up a sheet of paper. This image size is determined by the `JOB SIZE` setting. Your software application usually sends a command to tell the printer what size image to use for text. If no command is sent, the printer will default to the image size specified by the control panel `JOB SIZE` setting. Job size allows selection of one of four image sizes to fit four paper sizes, as well as four images sizes to fit four envelope sizes.

K-byte

One thousand twenty four (1024) bytes. A unit of measure for computer memory or data storage.

Legal

$8\frac{1}{2}$ by 14 inch size paper, primarily used in the United States and Canada for printing legal documents.

Letter

$8\frac{1}{2}$ by 11 inch size paper, commonly used in the United States and Canada.

Lower Cassette

The Lower Cassette is an optional base you can attach to your printer. It comes with either a letter-size or an A4-size paper tray. Additional paper trays and an envelope tray can be purchased. The Optional Lower Cassette (LC) provides increased print media capacity as well as adding versatility to your printer by converting it from single to dual bin capability.

Menu

A list of items presented for selection from the printer's control panel. The printer has two menus: The Printing Menu and the Configuration Menu.

Monarch

The standard letter envelope used primarily in the United States an Canada for personal correspondence ($3\frac{7}{8}$ by $7\frac{1}{2}$ inches).

MP Priority Feed

A paper handing of feature available when an Optional Lower Cassette is installed and the `TRAYS LC ONLY *` menu setting is selected. Typically in this configuration, paper or other print media is fed only from the Optional Lower Cassette Tray and the Multi-Purpose tray is closed. However, if you put paper or other print media (such as overhead transparencies) in the Multi-Purpose tray, they will be immediately used for printing. It is not necessary to select the Multi-Purpose tray as a paper source or to select manual feed from either your software or from the printer control panel.

MP Size

`MP SIZE` is a control panel selection item that you must use to tell the printer the physical size of the paper you put into the Multi-Purpose (MP) tray because the printer does not have paper-size sensors.

MP Tray

A Multi-Purpose tray which supports several types and sizes of paper and other print media. This allows your printer to be very versatile without having to buy a separate tray for each size of media. Since the Multi-Purpose tray can handle various sizes of media, you must use the control panel `MP SIZE` menu item to tell the printer the physical size of the print media that you have loaded into the Multi-Purpose tray.

Off-Line

A status during which the printer will not accept data from the computer. Some errors automatically take the printer off-line. Pressing ON LINE switches the printer between on-line and off-line. The printer is off-line any time the On Line indicator is not lit.

On-Line

The state in which the printer will accept data from the computer. The printer is on-line when the On Line indicator is lit.

Orientation

The default direction of print across a page. The HP LaserJet IIIP printer printer supports four orientations: portrait, landscape, reverse portrait, and reverse landscape. Only one orientation is allowed per page. (See *Print Direction*.)

Page Protection

Reserving a block of printer memory to prevent `21 PRINT OVERRUN` errors when composing very dense or complex graphics and text.

Page Size

A term used by some software applications to specify the size of the paper or other print media to use. This term is equivalent to Job Size for the HP LaserJet IIIP printer. (See *Job Size*.)

Paper Size

A term used by some previous LaserJet printers and some software applications to specify the size of the paper or other print media to use. This term is equivalent to Job Size for the HP LaserJet IIIP printer. (See *Job Size*.)

PCL Language

Hewlett-Packard's page description language for printers. Used for defining a page, selecting fonts, etc. PCL 5 also includes the HP-GL/2 graphics language.

Permanent Font

A font that resides in the printer's memory until the printer is powered off, memory is cleared, or the font is replaced via software command. (Resetting the printer does *not* clear a permanent font from memory.)

Pitch

The number of characters printed per horizontal inch. Pitch applies only to fonts with *fixed spacing*.

Point Size

The height of a font. Point size is measured from slightly above the top of uppercase letters to slightly below the bottom of lowercase descenders, such as the tail of the letter "y". There are approximately 72 points per inch.

Print Direction

The direction of print across a page. The HP LaserJet IIIP printer printer supports four print directions on a page in 90° increments.

Printer Commands

Commands used for the PCL language and HP-GL/2 languages. See **Escape Sequences**.

Printing Menu

Allows selections of job and page formatting choices from the control panel.

Proportional Spacing

Describes fonts for which character spacing varies. For example, a "w" can be three times wider than an "i".

RAM

Random Access Memory; the type of memory used by your printer to store downloaded fonts, macros, and print data.

Raster Graphics

Images composed of a pattern of dots. Graphics created in PCL language mode.

Resolution Enhancement

An HP technology that improves the 300 dpi print quality standard used in LaserJet printers, by smoothing the jagged edges of curves. Also called RET.

Scalable Font

A font scaled *within* the printer to any size from 0.25 to 999.75 point. Scalable fonts require a symbol set designation.

Scalable Typeface

Typeface designs that are digitized for reproduction and distribution for printers. The source of both bitmapped and scalable fonts.

Set-Up Strings

PCL printer commands usually entered in a designated "field" of a software program. Set-up strings are sent to the printer prior to printable data.

Soft Font

Bitmapped or scalable fonts that can be transferred from disks on your computer to the printer's memory. Also known as *downloadable fonts.*

Spacing

The horizontal distance of individual printed characters. All fonts have either *fixed* or *proportional* spacing.

Stroke Weight

The thickness of the lines of the characters in a particular font, for example, light, medium, bold, semi bold, extra bold and black.

Style

The shape of a font, for example, upright (normal text), italic, condensed, expanded, outline or shadowed.

Symbol Set

A unique grouping of all the available characters in a font. Each symbol set is defined with a specific set of applications in mind. For example, the LEGAL symbol set includes special characters used in the law profession. Sometimes referred to as *character set.*

Temporary Font

A font that resides in printer memory until you print a Font Printout or Self Test, reset the printer, power the printer off, or clear or replace it using a software command.

Treatment
The emphasis placed on a font, such as italic or bold. Treatment describes both style and stroke weights.

Type
All letters of the alphabet and other characters, signs and symbols used to make words or sentences.

Typeface
The name of a *design* of characters and symbols. A variation in a typeface family. Univers Medium is one typeface and Univers Bold is another.

Typeface Cartridge
A cartridge containing scalable typefaces for use with the HP LaserJet IIIP printer printer.

Typeface Family
A group of typefaces with strong design similarities, often differing only by their treatment (for example, medium, bold, italic, bold italic).

Vector Graphics
Lines or curves drawn point-to-point by the printer. Graphics executed with HP-GL/2 commands.

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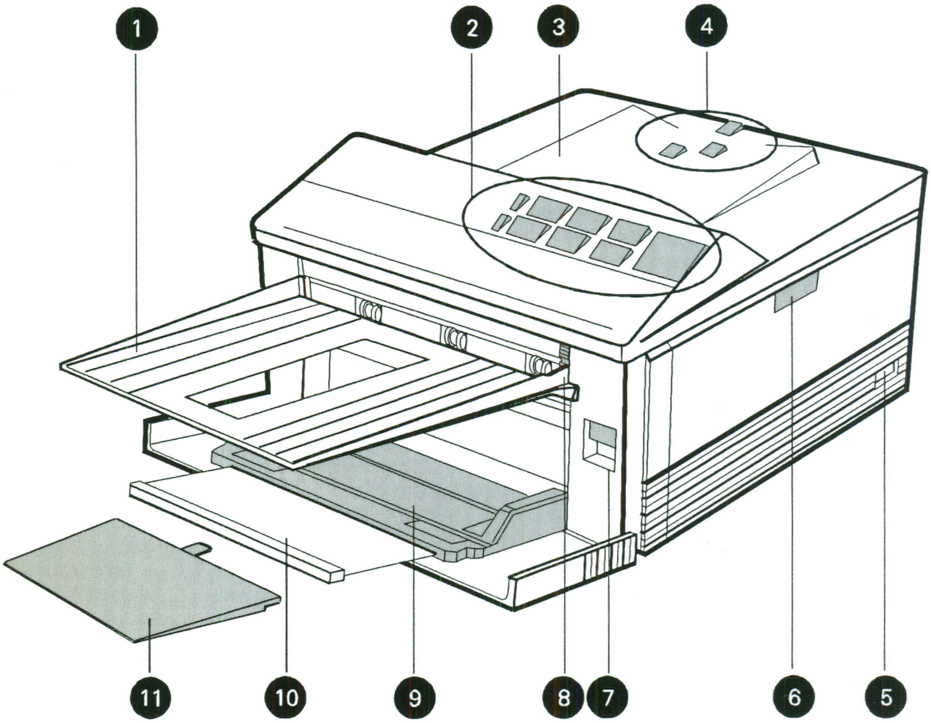
LaserJet IIIP Printer User's Manual



1. Front output tray
2. Control panel
3. Top output tray
4. Paper stops
5. ON/OFF power switch
6. Font cartridge door
7. Paper path door release button
8. Output tray selector button
9. Multi-Purpose (MP) tray
10. MP tray extender
11. Enhanced MP tray extender

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The *HP PCL 5 Printer Language Technical Reference Documentation* is designed especially for computer support personnel and software applications programmers. It contains detailed technical information about the HP PCL 5 printer language syntax and semantics. If you are not a programmer or not involved in computer support, the documentation that came with your printer and your application software, is all you need to get the most from your HP LaserJet printer.

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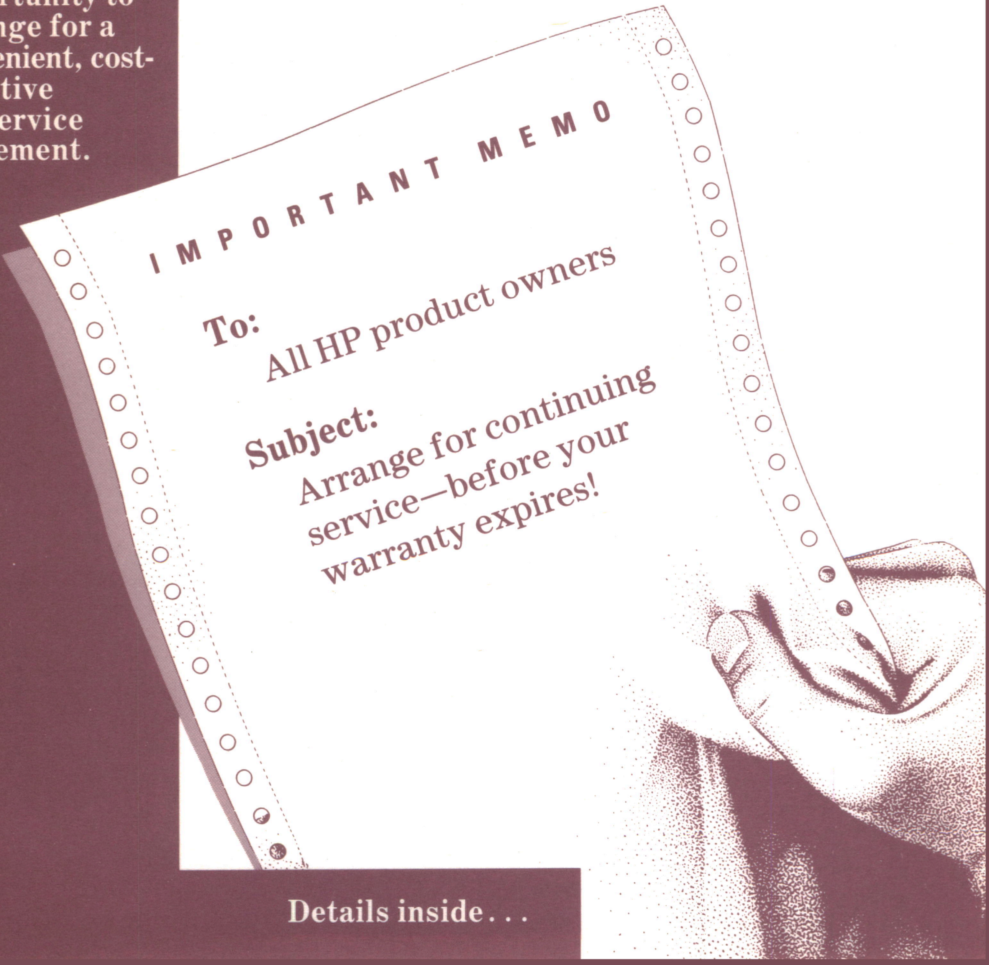

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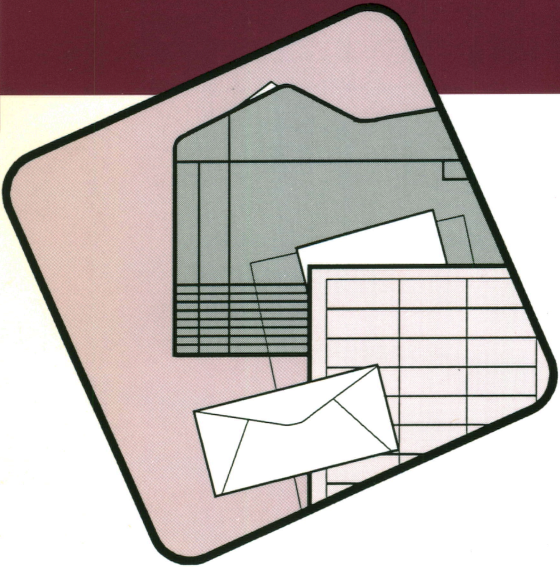

LaserJet IIIP Printer User's Quick Reference Guide

Printing Menu

1. Click the ON LINE key to take the printer off-line.
2. Click the MENU key to step through the Printing menu items shown on the display.
3. Click the +/- key to advance through the choices available under a Printing menu item.
4. Click the ENTER key to save your selection.

Display reads →	MP SIZE	COPIES	FONT SRC
Click →	+/-	+/-	+/-
Choices →	LETTER* LEGAL A4 EXEC COM10 MONARCH C5 DL This menu item appears when TRAYS LC ONLY is not selected.	1* to 99	I* (internal) C (cartridge) S (soft font) C and S appear only if you have installed a font cartridge or downloaded a permanent soft font.

An asterisk (*) indicates the factory default control panel setting.

Configuration Menu

1. Click the ON LINE key to take the printer off-line.
2. Click the MENU key until DEVICE CONFIG appears on the display.
3. Click the ENTER key to enter the Configuration menu. AUTOCONT appears on the display.
4. Click the MENU key to step through the Configuration menu items.
5. Click the +/- key to advance through the choices available under each Configuration menu item.
6. Click the ENTER key to save your selection.

Display reads →	AUTOCONT	I/O	BAUDRATE
Click →	+/-	+/-	+/-
Choices →	OFF* ON	PARALEL* SERIAL	300 600 1200 2400 4800 9600* 19200 This menu item only appears when serial interface is selected.

An asterisk (*) indicates the factory default control panel setting.

FONT NUM	PT. SIZE	PITCH	TRAYS
+/-	+/-	+/-	+/-
0* to 999	4 to 999.75 (Factory default is 12.00*)	.44 to 99.99 (Factory default is 10.00*)	BOTH LC TRAY MP TRAY LC ONLY*
The number of fonts available on your printer sets the upper limit.	This menu item only appears when a proportional scalable font is selected.	This menu item only appears when a non-proportional scalable font is selected.	This menu item only appears when the Optional Lower Cassette is installed.

ROBUST XON	DTRPOLAR	RET	PAGEPRO.
+/-	+/-	+/-	+/-
ON* OFF	HI* LOW	LIGHT MEDIUM* DARK OFF	OFF* LETTER LEGAL A4
This menu item only appears when serial interface is selected.	This menu item only appears when serial interface is selected.		This menu item only appears when additional memory is installed in the printer.

Font Selection Commands

When using printer commands to select fonts, the font characteristics should be entered in a specific order: symbol set, spacing, pitch, point size, style, stroke weight and typeface.

The # signs in the table below represent a value or a number you must type in the command. “ID” in the symbol set command represents the symbol set ID number.

The LaserJet IIIP’s Print Fonts test page shows complete commands for the printer’s internal fonts, as well as any accessory fonts or typefaces you have installed or downloaded to the printer.

Symbol Set	**Spacing**	**Pitch**	**Point Size**	**Style**	**Weight**	**Typeface Family ID**
␛(ID	**␛(s#P**	**␛(s#H**	**␛(s#V**	**␛(s#S**	**␛(s#B**	**␛(s#T**
1F = ISO 69: French 0N = ECMA-94 Latin 1 2S = ISO 17: Spanish 0U = ASCII 8U = Roman8 10U = PC-8 11U = PC-8 D/N 12U = PC 850	0 = fixed pitch 1 = proport.	Enter # of characters per inch	Enter # of points	0 = upright 1 = italic	-4 = extra light -3 = light -2 = demi light -1 = semi light 0 = medium 1 = semi bold 2 = demi bold 3 = bold 4 = extra bold 5 = black 6 = extra black 7 = ultra black	3 = Courier 4148 = Univers 0 = Lineprinter 4101 = CG Times

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Commonly Used Printer Commands

Printer Command	Function	# Refers to
${}^{E}{}_{C}$E	Resets the printer	n/a
${}^{E}{}_{C}$&ℓ#X	Selects the number of copies	1 to 99
${}^{E}{}_{C}$&ℓ#F	Sets the text length	number of lines
${}^{E}{}_{C}$&ℓ#H	Chooses a paper source	1 = MP tray 2 = manual feed (paper) 3 = manual feed (envelopes) 4 = Optional Lower Cassette
${}^{E}{}_{C}$&ℓ#A	Chooses a job (page) size (Some applications refer to job size as paper or envelope size.)	1 = executive 2 = letter 3 = legal 26 = A4 80 = Monarch 81 = Com-10 90 = DL 91 = C5
${}^{E}{}_{C}$&ℓ#O	Sets the page orientation	0 = portrait 1 = landscape 2 = reverse portrait 3 = reverse landscape
${}^{E}{}_{C}$&a#L	Sets the left margin	column number
${}^{E}{}_{C}$&a#M	Sets the right margin	column number
${}^{E}{}_{C}$&ℓ#E	Sets the top margin	number of lines for the top margin
${}^{E}{}_{C}$&ℓ#D	Sets the line spacing	lines per inch (1,2,3,4,6,8,12,24 or 48)
${}^{E}{}_{C}$&d0D	Begins fixed underline	n/a
${}^{E}{}_{C}$&d@	Ends underline	n/a
${}^{E}{}_{C}$(#X	Selects the primary font by ID number	user assigned font ID number
${}^{E}{}_{C}$&k#H	Horizontal motion index	1/120th inch increments
${}^{E}{}_{C}$&ℓ#C	Vertical motion index	1/48th inch increments
${}^{E}{}_{C}$%#A	Enters PCL mode	0 = use the previous PCL curser position 1 = use the current HP-GL/2 pen position
${}^{E}{}_{C}$%#B	Enters HP-GL/2 mode	0 = use the previous HP-GL/2 pen position 1 = use the current PCL curser position

For a complete list of printer commands, see your ***HP LaserJet IIIP Printer User's Manual***.

Refer to your ***HP PCL 5 Printer Language Technical Reference Manual*** for more information

JOB SIZE	ORIENT	LINES OF TXT	MAN FEED
+/-	+/-	+/-	+/-
LETTER* LEGAL A4 EXEC COM10 MONARCH C5 DL	P* (portrait) L (landscape)	5 to 128 (Factory default is 60*)	OFF* ON

Using the Control Panel Keys

Activate the function listed on the **top** of a control panel key by momentarily pressing and then releasing ("clicking") the key.

To activate the function listed on the **bottom** of a key, press and hold down the Alt key while you click the desired key.

SYM SET	DEVICE CONFIG
+/-	ENTER
ROMAN-8 * ECMA-94 PC-8 PC-8 DN PC-850 LEGAL ISO-2(Intl. Reference Ver.) ISO-4(United Kingdom) ISO-6(ASCII) ISO-10(Swedish/Finnish) ISO-11(Swedish names) ISO-14(JIS ASCII) ISO-15(Italian) ISO-16(Portuguese) ISO-17(Spanish) ISO-21(German) ISO-25(French) ISO-57(Chinese) ISO-60(Norwegian v1) ISO-61(Norwegian v2) ISO-69(French) ISO-84(Portuguese-PC) ISO-85(Spanish-PC) GERMAN (HP) SPANISH (HP) VN MATH VN INTL VN US PS MATH PS TEXT MATH-8 PI FONT MS PUBL WINDOWS DESKTOP	Click the ENTER key to enter the Configuration menu. (See "Configuration Menu" chart below.)

ing the FORM FEED key

e Form Feed light remains lit when there is data
naining in the printer. To print this data, do the following:

Click the ON LINE key to take the printer off-line.

Click the FORM FEED key.

Click the ON LINE key to put the printer back on-line.

Printer Status Messages (partial list)

Message	Recommended Response
00 READY	Normal condition while the printer is waiting to be used. May be accompanied by your selected MP SIZE or load tray message.
02 WARM UP	Normal condition while the printer is warming up.
04 SELF TEST	Click the ON LINE key to exit the continuous Self Test mode. Up to six more pages will print.
10 RESET TO SAVE	Hold down the Alt key and click the Reset key to activate changes to the Printing menu. (Data in the printer's memory will be lost.)
12 OPEN OR NO EP	Insert a toner cartridge if it is missing. Securely close the paper path door. **If this message persists, refer to chapter 8 in your User's Manual.**
13 PAPER JAM	Open the paper path door and the fuser door to check for jammed paper. Carefully remove the paper **following the directions in chapter 8 of the User's Manual.**
FE CARTRIDG	To clear the error caused by the font cartridge being removed while the printer was on-line, turn the printer **OFF,** then back **ON**.
LANGUAGE ENGLISH	Click the +/- key to choose a language. Click the ENTER key to save the language. Then click the ON LINE key to put the printer back on-line.
ME FEED MF FEED	Load the correct envelopes, or paper, into the Multi-Purpose tray, and click the ON LINE key.
MF READY	Normal condition. Printer is configured for manual feed.
MP LOAD LC LOAD LE LOAD	Load the correct paper into the selected Multi-Purpose, or Optional Lower Cassette tray (paper or envelope). The MP SIZE or LE TRAY items must be set to match the media size given in the message.
MP EMPTY LC EMPTY LE EMPTY	This message does not require paper to be loaded. It is only a reminder that paper is not currently in the Multi-Purpose or Optional Lower Cassette tray.

For a complete list of printer status messages, refer to chapter 8 in the ***HP LaserJet IIIP Printer User's Manual***.